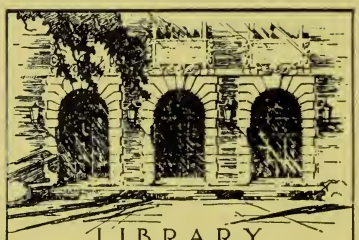

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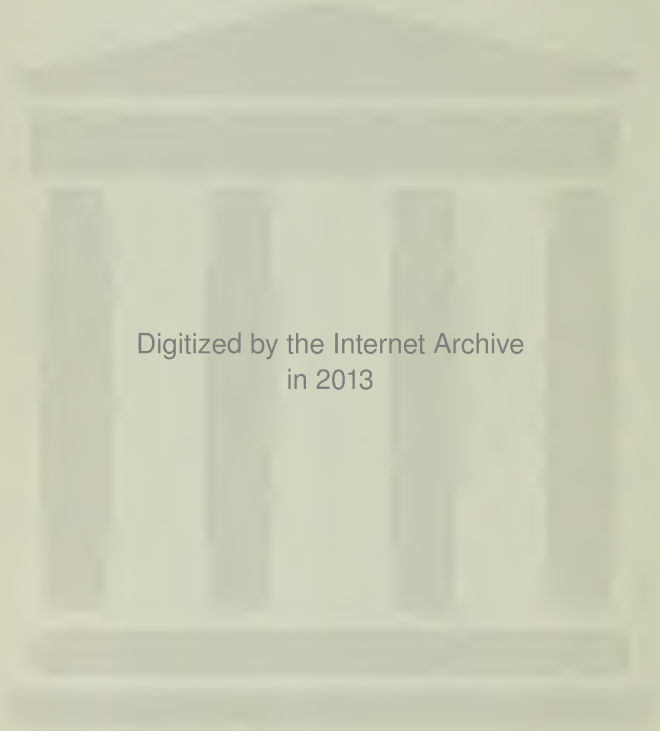

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CATALOGUE

3

AGRICULTURAL AND MECHANICAL COLLEGE RECORD.

VOL. 4. No. 4.

MARCH, 1906.

WEST RALEIGH, N. C.

The Agricultural and Mechanical College Record is published quarterly by the College and is entered at the Post-office at West Raleigh, N. C., as second-class matter.

Persons wishing to receive the College Catalogue, or other numbers of the Record, or desiring any information concerning the College, may address

President GEORGE T. WINSTON, LL.D.,
Agricultural and Mechanical College,
West Raleigh, N. C.

THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1905-1906

RALEIGH:
E. M. Uzzell & Co., State Printers and Binders.
1906.

CALENDAR.

1906.

JANUARY.

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COLLEGE CALENDAR.

1906.

Thursday,	July	12,	Entrance examination at each county court-house, 10 A. M.
Wednesday,	September	5,	Entrance examination at the College, 9 A. M.
Thursday,	September	6,	First Term begins; Registration Day.
Wednesday,	September	5,	Examinations to remove conditions. See page 21.
Thursday,	September	6,	
Friday,	September	7,	
Saturday,	September	8,	
Thursday,	November	29,	Thanksgiving Day.
Thursday,	December	20,	First Term ends.

1907.

Friday,	January	4,	Second Term begins; Registration Day.
Saturday,	February	2,	Examinations to remove conditions. See page 21.
Saturday,	February	9,	
Saturday,	February	16,	
Saturday,	February	23,	
Saturday,	March	16,	Second Term ends.
Monday,	March	18,	Third Term begins; Registration Day.
Sunday,	May	26,	Baccalaureate Sermon.
Monday,	May	27,	Alumni Day.
Tuesday,	May	28,	Annual Oration.
Wednesday,	May	29,	Commencement Day.

BOARD OF TRUSTEES.

(State Board of Agriculture.)

S. L. Patterson, *President ex officio*, Raleigh.
T. K. Bruner, *Secretary ex officio*, Raleigh.

John M. Forehand, Rockyhock, First District.
J. B. Stokes, Windsor, Second District.
Wm. Dunn, New Bern, Third District.
C. N. Allen, Auburn, Fourth District.
R. W. Scott, Melville, Fifth District.
A. T. McCallum, Red Springs, Sixth District.
J. P. McRae, Laurinburg, Seventh District.
R. L. Doughton, Laurel Springs, Eighth District.
W. A. Graham, Machpelah, Ninth District.
A. Cannon, Horse Shoe, Tenth District.

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R. L. Smith, *Secretary*, Albemarle.

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Frank Wood, Edenton.
E. M. Koonce, Jacksonville.
W. H. Ragan, High Point.
David Clark, Charlotte.
W. J. Peele, Raleigh.
J. Frank Ray, Franklin.
Charles W. Gold, Wilson.
S. L. Patterson, Commissioner of Agriculture, *ex officio*.
George T. Winston, President of the College, *ex officio*.

FACULTY.

GEORGE TAYLOE WINSTON, A.M., LL.D., President and Professor of Political Economy.

DANIEL HARVEY HILL, A.M., Lit.D., Professor of English, and Vice-President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Mathematics.

HENRY MERRYMAN WILSON, A.B., Professor of Textile Industry.

CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Professor of Agriculture.

TAIT BUTLER, V.S., Professor of Veterinary Science and Zoology.

FRANK LINCOLN STEVENS, M.Sc., Ph.D., Professor of Botany and Vegetable Pathology.

ELLERY BURTON PAINE, M.S., E.E., Professor of Electrical Engineering and Physics.

H. HAROLD HUME, B.Agr., M.S., Professor of Horticulture.

CHARLES WALTER THOMAS, M.E., Professor of Mechanical Engineering.

WILSON GILLHAM HEATON, First Lieutenant U. S. A., Professor of Military Science and Tactics.

BENJAMIN WESLEY KILGORE, M.S., Lecturer on Soils and Fertilizers.

ROBERT E. LEE YATES, A.M., Assistant Professor of Mathematics.

CHALMER KIRK McCLELLAND, M.S., Assistant Professor of Agriculture.

JOHN CHESTER KENDALL, B.S., Assistant Professor of Dairy Husbandry.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Assistant Professor of Zoology and Anatomy.

CHARLES BENJAMIN PARK, Superintendent of Shops.

FRANKLIN SHERMAN, B.S.A., Instructor in Entomology.

THOMAS NELSON, Instructor in Weaving and Designing.

CARROLL LAMB MANN, B.S., Instructor in Mathematics.

PINCKNEY GUSTAVE DEAL, Instructor in Forge Shop and Pattern-making.

THOMAS SIMEON LANG, B.S., C.E., Instructor in Civil Engineering.

GEORGE SUMMEY, Jr., Ph.D., Instructor in English.

WINFRED MORSE ADAMS, B.S., Instructor in Electrical Engineering.

CHARLES WALKER, Ph.D., Instructor in Chemistry.

ALFRED De St. AMANT, B.S., Instructor in Drawing.

RANDOLPH FITZHUGH MASON, B.A., Instructor in English.

FRANK REIMER, M.S., Instructor in Horticulture.

JOHN HOUSTON SHUFORD, B.S., Instructor in Dyeing.

CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.

ALFRED HENRY THIESSEN, B.S., Instructor in Meteorology.

RUSSELL SAGE WOGLUM, A.B., M.S.A., Instructor in Entomology.

WILEY THEODORE CLAY, Instructor in Wood-working.

CHARLES HERBERT LAWRANCE, B.S., Instructor in Drawing.

OSCAR LUTHER BAGLEY, B.S., Instructor in Chemistry.

RICHARD HUGH HARPER, B.S., Instructor in Chemistry.

JOHN ALSEY PARK, B.E., Instructor in Mathematics.

HERBERT NATHANIEL STEED, Assistant in Textile Industry.

JAMES CLARENCE TEMPLE, B.Agr., Assistant in Bacteriology.

ARTHUR JOHN WILSON, Assistant in Chemistry.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar and Proctor.

ARTHUR FINN BOWEN, Bursar.

BENJAMIN SMITH SKINNER, Steward.

Miss CAROLINE BALDWIN SHERMAN, Librarian.

Mrs. DAISY LEWIS, Matron.

JAMES RUFUS ROGERS, A.B., M.D., Physician.

AGRICULTURAL EXPERIMENT STATION DEPARTMENT.

GEORGE TAYLOE WINSTON, A.M., LL.D., President.

BENJAMIN WESLEY KILGORE, M.S., Director.

WILLIAM ALPHONSO WITHERS, A.M., Chemist.

CHARLES WILLIAM BURKETT, M.Sc., Ph.D., Agriculturist.

TAIT BUTLER, V.S., Veterinarian.

FRANK LINCOLN STEVENS, M.S., Ph.D., Biologist.

H. HAROLD HUME, M.S., Horticulturist.

RUSSELL SAGE WOGLUM, Acting Entomologist.

JOHN STRAUCHON JEFFREY, Poultryman.

OSCAR LUTHER BAGLEY, B.S., Assistant Chemist.

RICHARD HUGH HARPER, B.S., Assistant Chemist.

JOHN CHESTER KENDALL, B.S., Assistant, Dairy Husbandry.

WILLIAM KERR, B.Agr., Assistant, Field Experiments.

ARTHUR FINN BOWEN, Bursar.

MILITARY ORGANIZATION.

Commandant of Cadets.

FIRST LIEUTENANT WILSON G. HEATON, U. S. Army.

Cadet Major.

W. G. KNOX.

Battalion Staff.

M. H. CHESBRO, Second Lieutenant and Quartermaster.

G. P. ASBURY, Captain and Adjutant.

Non-commissioned Staff.

W. B. TRUITT, Sergeant Major.

A. C. JONES, Quartermaster Sergeant.

C. B. WHITEHURST, Color Sergeant.

Officers Unassigned.

W. C. PIVER, Captain.

T. J. OGBURN, First Lieutenant.

Band.

F. M. PARKS, Drum Major.

W. N. HOLT, Sergeant.

H. S. BATTIE, Sergeant.

L. E. LOUGEE, Sergeant.

C. J. BRYAN, Corporal.

Company A.

D. A. COX, Captain.

T. M. LYKES, First Lieutenant.

L. L. VAUGHAN, Second Lieutenant.

R. MAXWELL, Second Lieutenant.

P. W. HARDIE, First Sergeant.

L. R. GILBERT, Sergeant.

W. L. BLACK, Corporal.

J. K. PLUMMER, Corporal.

C. C. DAWSON, Corporal.

E. V. FOWLER, Corporal.

W. W. JONES, Corporal.

Company B.

D. W. ROBERTSON, Captain.

J. G. MORRISON, First Lieutenant.

A. W. GREGORY, Second Lieutenant.

K. L. BLACK, Second Lieutenant.

G. R. HARDESTY, First Sergeant.

L. J. SCHWAB, Sergeant.

H. S. MONTAGUE, Sergeant.

C. L. GARNER, Sergeant.

J. J. WELLS, Sergeant.

D. LINDSAY, Corporal.

D. Y. HAGAN, Corporal.

G. H. CALDWELL, Corporal.

E. E. SMITH, Corporal.

H. I. STANBACK, Corporal.

Company C.

R. H. TILLMAN, Captain.

A. B. PIVER, First Lieutenant.

L. MOORE, Second Lieutenant.

A. E. ESCOTT, Second Lieutenant.

R. H. CARTER, First Sergeant.

E. F. MEADOR, Sergeant.

R. GILL, Sergeant.

R. S. GRAVES, Sergeant.

L. H. COUCH, Corporal.

R. E. WHITE, Corporal.

L. M. WEAVER, Corporal.

Company D.

L. T. WINSTON, Captain.

J. F. HANSELMAN, First Lieutenant.

J. W. CLARK, Second Lieutenant.

N. E. BELL, Second Lieutenant.

G. F. HINSHAW, First Sergeant.

J. L. FERGUSON, Sergeant.

B. B. EVERETT, Sergeant.

J. O. SHUFORD, Sergeant.

J. E. OVERTON, Sergeant.

W. G. PITMAN, Sergeant.

E. W. GREGORY, Corporal.

W. G. FERGUSON, Corporal.

T. M. POYNER, Corporal.

L. J. HERRING, Corporal.

Company E.

W. S. TOMLINSON, Captain.

J. P. LOVILL, First Lieutenant.

B. B. EGERTON, Second Lieutenant.

J. H. WILLIAMS, Second Lieutenant.

J. L. HEMPHILL, First Sergeant.

L. F. CARLETON, Sergeant.

W. C. STAPLES, Sergeant.

O. F. McNAIRY, Sergeant.

J. M. MILLS, Sergeant.

C. E. STEWART, Corporal.

A. G. BOYNTON, Corporal.

A. D. DUPREE, Corporal.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress to aid in the support of the College and of the State Agricultural Experiment Station, which is now a department of the College.

The College is beautifully located on the extension of Hillsboro street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from twelve deep wells. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and twenty-five acres of land and sixteen buildings, and its teaching force consists of forty specialists. Its laboratories, drawing-rooms and work-shops are well equipped. Its library contains four thousand six hundred volumes, and its reading-room is well supplied with literary and technical journals and newspapers.

BUILDINGS.

The Main Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President and the Bursar, several recitation-rooms, and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms and shops of the department.

Primrose Hall is a two-story brick building, which has attached a fine range of glass structures. The upper floors contain a large lecture-room and horticultural laboratory. The plant-houses are three in number and are immediately accessible from the lecture-rooms and laboratories.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall.—In honor of the late R. Stanhope Pullen, the greatest benefactor of the College, the large new building recently finished has been called Pullen Hall. The basement of this building is used as a dining-room and seats five hundred students. The first story is used for library, reading-room and lecture-rooms. The second story serves as the College auditorium. This room is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is 208 by 74 feet. The lower or basement floor contains the class-rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making, stock judging, farm butchering and cold-storage accommodations for the products.

The second floor contains the offices of the department, class-rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery.

On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology and veterinary medicine. There are well-equipped class-rooms and large, well-lighted laboratories.

The building affords the best accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

The Boiler House is a single-story brick building, containing boilers, fire-pump and the machinery connected with the steam-heating plant.

The Barn is a frame building of modern design and carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

Fire Protection.—The College is supplied with a steam-pump, reservoir, hydrants and fire-hose to protect the buildings from burning.

Heat and Light.—All the College buildings are lighted by electricity from a plant managed by the students, under the direction of the Professor of Electrical Engineering.

The third and fourth dormitories, Primrose Hall and the greenhouses attached are heated by hot water; the Textile Building is heated by the Sturtevant hot-air system, and the other College buildings are heated by the Warren-Webster vacuum system of building-heating.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture

and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch of Missouri.

The Director's office is in the Agricultural Building in Raleigh and the laboratories are in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads

lacking in physical development, mental capacity or moral fiber, nor for those that are unable or unwilling to observe regularity, system and order in their daily work.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by labor on the College farm.

The Zenner Disinfectant Company, Detroit, Mich., offers a silver medal to the student making the best report on the Live Stock Exhibit at the State Fair. The value of this medal is $25.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live Stock Exhibit at the State Fair.

DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The discipline is intended to secure studious and economical habits, with punctuality, system and order in the performance of all duties. A durable uniform, which is required to be worn on all occasions, prevents extravagance and folly in dress; rooms plainly furnished and a mess-hall economically managed by the College prevents extravagance in living; regular study hours, day and night, with proper restrictions as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdyism.

Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance and sympathy are used in this great work; but the College is in no sense a reform school, and its work must not be hindered by the presence of young men who are grossly vicious, idle or incompetent.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it

is plain that his stay in the institution is not profitable to himself or to the College.

The scale of grading used is as follows:

90 per cent., or more.....grade 1
80 per cent., or more.....grade 2
70 per cent., or more.....grade 3
60 per cent., or more.....grade 4
50 per cent., or more.....grade 5
40 per cent., or more.....grade 6

The passing grade is 4. Conditions are assigned for grades 5 and 6. These must be removed at the regular condition examinations, or special examinations will be granted by the Faculty upon receipt of $1 for each.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is required to attend religious service in Raleigh on Sunday morning at the church of his choice.

The Young Men's Christian Association, containing in its membership representatives of all the Christian denominations, meets regularly each Sunday afternoon at 2:30 o'clock for conference, Bible study and worship, and exerts a wholesome influence throughout the College.

The members of this Association will meet and welcome new students at the railroad station.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Out-door sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Faculty rules governing athletics are as follows:

1. Before any student can become a member or a substitute member of any athletic team in this College and take part in any intercollegiate contest, he must make application to the Committee on Athletics in the College and secure the endorsed approval of that committee to his application. It shall be the duty of the Athletic Committee to have the executive officers of the College endorse such application to the effect that the applicant is a regular student of the

College, registered within thirty days after the beginning of the fall session.

2. It shall be the duty of the Athletic Committee to inquire into and make a record of the athletic experiences of the applicant, and it shall be the duty of the applicant to appear before the committee and answer on his honor such questions as the committee may see fit to ask.

3. It shall be the duty of the Athletic Committee to require a pledge, in writing, of the applicant, certifying on his honor that he has never accepted, directly or indirectly, remuneration, compensatory gift, valuable consideration or promise thereof, for his athletic services, and that he is, in the proper and strict sense of the word, an amateur player in collegiate athletic sports, before the committee endorses his application.

4. No student of the College who has been a member or a substitute member of a base-ball or a foot-ball team at another college or university shall be permitted to become a member of either base-ball or foot-ball team at this College, unless and until he shall have been a student in residence at this College for at least five months.

5. No person whose name is in the faculty list or appears in the catalogue list of officers of instruction and administration of the College, and who receives a remuneration therefrom, shall be a member of any athletic team representing the College.

6. Whereas, a member of an athletic team of this College is a representative student and enjoys special honor in thus representing the College, this privilege shall be withheld from any student whose scholastic standing is discreditable.

7. Any student who has participated as a player on a college team, in either base-ball or foot-ball, or both, for a period of four years, shall thereafter be ineligible for such athletic contests of the College.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practice in base-ball, foot-ball, track athletics, etc.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about four thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Libra-

rian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about seven thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific, and technical research and training.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and the writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The Society meets monthly for the discussion of biological and agricultural questions.

The Berzelius Chemical Society meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature with which the College is well supplied.

Electrical Engineering Society.—The members of the Society meet once a week in the physical laboratory. To review the articles on

electrical engineering in the current journals is one of the chief objects of the Society. The Society has at its disposal the best periodicals, most of which are furnished free of charge by the publishers.

The Pullen, Leazar, and Tenerian Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Glee Club is composed of about twenty young men, embracing the best musical talent of the College. It aims to give one concert each year, and afterwards to sing at various College entertainments and functions during the year.

The Alumni Association meets on Monday of each year preceding Commencement day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses will be examined on Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

Applicants for admission to the two-year courses in Agriculture and Textile Industry, if they are twenty years of age, or over, will not be required to take the entrance examinations.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1906 is July 12th. These examinations will save the expense of a trip to Raleigh

in case the candidate should fail or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Wednesday preceding the opening day. The examinations begin with English at 9 A. M., in Room 21, Main Building, followed by Mathematics at 11, and History at 2 in the same room. The date for 1906 is September 5th.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.

2. Applicants for admission to the two-year course in Agriculture, if they are over twenty years of age.

3. School-teachers holding teachers' certificates.

4. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

CONDITION EXAMINATIONS.

Examinations will be held during September and February for the removal of conditions. Students will be admitted to these examinations without charge.

During 1906-1907 these examinations will be held on the following days, beginning at 9 o'clock A. M.:

Wednesday, September 5th, and Saturday, February 2d—Agriculture, Horticulture, Civil Engineering, Architecture, Mechanical Engineering, Electrical Engineering, Mining, Metallurgy, and Textile Industry.

Thursday, September 6th, and Saturday, February 9th—Chemistry, Dyeing, Physics, Geology, Mineralogy, Botany and Vegetable Pathology, Zoology, Entomology, Veterinary Science, History, Political Economy, Military Science.

Friday, September 7th, and Saturday, February 6th—English.

Saturday, September 8th, and Saturday, February 3d—Mathematics.

Special examinations for the removal of conditions may be held at other times only upon petition to the Faculty, said petition to be accompanied by a receipt from the Bursar for one dollar for each special examination, and to be signed by the head of the department in which the examination is to be held. All moneys collected as fees for special examinations will be turned over to the loan fund for needy students.

Conditions not removed within a year can be removed only by taking the subject again in class, except that a student who enters college with conditions in practice work may be allowed to carry half of his conditions in practice work to the second year if he remove half of these conditions during his first year.

In order to be graduated, a student must be clear of all conditions before beginning the March examinations of the Senior Year.

A student who fails in three studies for any term will be dropped to a lower class or from the College rolls.

The Registrar will include in the report of each student for each term a list of conditions against the student and a notice of the time at which condition examinations will be held.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Wednesday in May, with a vacation of about two weeks at Christmas.

EXPENSES.

The total expense of a student for the first year is as follows:

Tuition	$30.00
Room rent	10.00
Fuel and lights	12.50
Furniture	2.00
Library	1.00
Incidental	1.00
Medical attention and medicine	6.00
Physical culture	2.00
Lectures	1.00
Registration	2.00
Board	90.00
Shop (material and use of tools)	1.00
Drawing (material furnished)	1.00
Uniform and cap	14.30
Drawing instruments (complete outfit)	8.85
Books (estimated cost)	5.00
Laundry (estimated cost)	10.00
Total expense for year	$197.65

The total expense, as shown in the above table, for the year amounts to $197.65.

Students having scholarships do not pay tuition. Their total expense is $30 less, or $167.65.

Freshmen and first-year students in Agriculture are not required to take drawing or shop work. Their total expense for the year is $186.80 without scholarship, or $156.80 with scholarship.

These amounts include all charges for board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for spending money, nor for contingencies.

The largest payments are made in September and in January. A student on entering college will need about sixty dollars to meet his various dues for the first month. The following table shows the distribution of the total expense for the session by months:

Expense.

DISTRIBUTION BY MONTHS.

Payments required on first day of	*Without Scholarship.*	*With Scholarship.*
September	$ 58.37	$ 43.37
October	20.41	20.41
November	11.11	11.11
December	11.11	11.11
January	52.21	37.21
February	11.11	11.11
March	11.11	11.11
April	11.11	11.11
May	11.11	11.11
Total	$197.65	$167.65

Tuition, fuel and lights, and room rent, together with the registration, furniture, physical culture, and medical fees, are collected one-half ($32.25) in September, or whenever the student enters, and one-half ($32.25) in January. Students registering on the day appointed for registration are excused from paying the registration fee. Library, incidental, and lecture fees ($4) are collected in September, or whenever the student enters. Board is payable in installments of $10 per month on the first day of each month from September to May, inclusive. Board for less time than one month is charged for at the rate of fifty cents a day, or $3 per week. Choice is given between paying by the month, by the week, or by the day. The College Bursar is forbidden by the Trustees to give credit, and there is no deviation from this rule.

Students withdrawing from College within two weeks from date of entrance will have refunded all moneys paid by them except charges for board during the time here. Students withdrawing later than two weeks from entrance will have no moneys refunded except board for balance of month.

Drawing instruments are not required in the Freshman Class nor in the First-year Mechanic Arts course until the beginning of the second term. These instruments are furnished by the College at cost to all students requiring them. New students are advised not to purchase instruments before consulting the drawing instructors.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillow-cases, one pillow and two bed-spreads for single bed.

In addition to the fees enumerated above, students are required to pay fees as follows: A fee of $1 from students taking work in biological (except bacteriological), physical, or electrical laboratory, for material furnished. The deposits for the Chemistry Department are as follows: Inorganic laboratory, $3; analytical laboratory, $5; organic laboratory, $4; determinative mineralogy and assaying, $3. A deposit of $3 from Juniors and $4 from Seniors taking dyeing or bacteriology, to cover cost of breakages. A deposit of $5 from textile students, to cover cost of designing, supplies, tools, etc. Any unused portion of deposits to chemical, bacteriological or dyeing laboratories or to the Textile Department will be returned at the end of the year. If the deposit made is not sufficient to cover breakages and cost of material furnished, the students are required to make good the deficiency.

UNIFORM.

The College uniform must be worn by all students except winter-course students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. New students are especially cautioned not to bring with them to the College a supply of citizens' clothing, as the uniform must be worn on all occasions. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home or purchased in the city. In order to secure uniformity, dark colors (black or dark gray) are required.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as

possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time is given for repayment to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, *Alumni* and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $1,187.29.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights,

steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, pillows, bed-spreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 10 o'clock, and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

COURSES OF INSTRUCTION.

The College offers the following Courses of Instruction:

I. Four-year Courses:

1st. **Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Industrial Chemistry, and Dyeing.

3d. **Textile Industry** or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Agriculture is conferred upon a graduate in the Four-year Course in Agriculture. The degree of Bachelor of Science is conferred upon a graduate of the Four-year Course in Chemistry or Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other Four-year Courses.

II. Short Courses of two years (not leading to a degree) in Agriculture, in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending, and in Applied Electricity.

The Short Courses include nearly all the practical work of the Four-year Courses, with less theoretical instruction. They are intended for students who desire chiefly manual training or for those who are unable to complete the Four-year Courses.

III. Winter Courses in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and extending to the close of the term ending in March.

IV. Normal Courses for the training of teachers along industrial lines.

V. The Summer School.

VI. Graduate Courses, extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

AGRICULTURAL COURSES.

I. The Four-year Course in Agriculture.
Ia. The Two-year Course in Agriculture.
Ib. The Winter Course in Agriculture and Dairying.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their profession. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

The four-year course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domains of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The two-year course is designed to meet the needs of those who are unable to take the longer course. It is especially devoted to the practical study of Agriculture and Horticulture and their various branches, and the natural sciences which are so closely related to farming.

The ten-weeks winter course in Agriculture is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention.

The ten-weeks dairy course is a course in practical butter-making in accordance with the most approved methods of the modern creamery.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices upon yield and upon fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

In work other than purely technical the agricultural students meet the same instructors and enjoy the same privileges as other students of the College. In all departments the laboratory method is freely employed. The student uses apparatus with his own hands and consults the literature of the subject at every step.

Self-support while a Student.—The Board of Agriculture, in the interest of young men who are unable to meet necessary college expenses, has appropriated $1,500 annually for student labor. This generosity on the part of the Board enables every student to pay a good part of his college expenses; some are able to meet the entire expense this way. This sum appropriated is intended solely to pay for farm work. The work is precisely the sort of work that is done on the farm—plowing, hauling, tile-laying, feeding beef cattle, feeding dairy cattle, feeding and grooming horses, running ditches and terraces, repairing machinery and tools, harvesting crops, the care of hogs, poultry, etc.

This feature in the course of Agriculture is helpful not only in defraying college expenses, but serves as a training and education as well.

Requisites for Admission.—Applicants for admission to the four-year course in Agriculture must be at least sixteen years of age. They are examined in the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, and American History.

For the two-year course in Agriculture no entrance examinations are required if the applicant is at least twenty years old. Applicants not twenty years old desiring to enter the two-year course will stand an examination in Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

For the winter courses in Agriculture and Dairying no entrance examination is required, but applicants must be over eighteen years of age.

I. Four-year Course in Agriculture, leading to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 31†	3	3	3
Zoology, 46	4	--	--
Physiology, 47	--	4	4
General Horticulture, 21	5	--	--
Vegetable Gardening, 22	--	5	--
Dairying, 14	--	--	5
Algebra, 84	4	--	--
Geometry, 85	--	4	4
English, 88	3	3	3
Military Drill, 99	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock and Stock-judging, 1	4	--	--
Thremmatology, 2	--	4	--
Stock-feeding, 3	--	--	4
Plant Diseases, 34	3	--	--
Economic Entomology, 51	--	3	--
Systematic Botany, 32	--	--	3
Inorganic Chemistry, 61	3	3	3
Inorganic Chemistry (laboratory), 62	2	2	2
Physics, 71	2	2	2
Free-hand Drawing, 76	2	--	--
Mechanical and Agricultural Drawing, 77	--	2	2
English, 89 and 91	3	3	3
Military Drill, 99	3	2	2

Junior Year.

Farm Equipment, 4	4	--	--
Soils, 5	--	4	--
Farm Crops, 6	--	--	4
Veterinary Anatomy, 41	4	--	--
Veterinary Medicine, 42	--	4	--
Veterinary Practice, 43	--	--	4
Agricultural Chemistry, 66	2	2	2
Bacteriology, 36	2	2	2
Wood-work, 78	1	1	--
Forge-work, 79	1	1	--
Mechanical Technology, 80	1	1	--
Landscape Gardening, 23	--	--	3
English and History, 93 and 92	2	2	2
Business Law and Civics, 95 and 96	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	2	2

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Geology, 53	2	2	2
English, 92 and 90	2	2	2
Political Economy and Government, 97 and 98	2	2	2
Elect thirteen periods of the following:			
Animal Husbandry (horses), 8	2	--	--
Animal Husbandry (cattle), 9	--	2	--
Animal Husbandry (sheep and swine), 10	--	--	2
Farm Management, 18	2	2	2
Agronomy, 11	3	--	--
Special Crops, 12	--	3	--
Soil Physics and Soil Management, 13	--	--	3
Dairy Bacteriology, 15	3	--	--
Experimental Dairying, 16	--	3	--
Dairy Seminary, 17	--	--	3
Veterinary Medicine, 44	3	3	3
Fruit Culture, 24	5	--	--
Forestry, 25	--	5	--
Horticultural Literature, 26	--	--	5
Plant Diseases (advanced), 35	2	--	--
Bacteriology (advanced), 37	2	2	2
Systematic Entomology, 52	--	2	2
Economic Botany, 33	--	--	2
Industrial Chemistry, 68	2	2	2
Organic Chemistry, 63	2	2	2
Analytical Chemistry (laboratory), 64 and 65	9	9	9
Military Drill, 99	3	2	2

Ia. The Two-year Course in Agriculture.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 31	3	3	3
General Horticulture, 21	--	5	--
Vegetable Gardening, 22	--	--	5
Dairying, 14	5	--	--
Zoology, 46	4	--	--
Physiology, 47	--	4	4
Arithmetic, 82	5	--	--
Algebra, 83	--	5	5
English, 87	3	3	3
Military Drill, 99	3	2	2

Second Year.

Breeds of Live Stock and Stock-judging, 1	4	--	--
Thremmatology, 2	--	4	--
Stock-feeding, 3	--	--	4
Farm Equipment, 4	4	--	--
Soils, 5	--	4	--
Farm Crops, 6	--	--	4
Veterinary Anatomy, 41	4	--	--
Veterinary Medicine, 42	--	4	--
Veterinary Practice, 43	--	--	4
Plant Diseases, 34	3	--	--
Entomology, 51	--	3	--
Forge-work, 79	--	--	1
Carpentry-work, 78	--	--	1
Farm Machinery, 7	--	--	1
Inorganic Chemistry, 61	3	3	3
Inorganic Chemistry (laboratory), 62	2	2	2

WINTER COURSES IN AGRICULTURE AND DAIRYING.

General Statement.—The Winter Course in Dairying and the Winter Course in Agriculture are designed to meet the wants of young men who are ambitious to excel in their chosen vocation of farming and who feel the need of more and better preparation before taking up their life-work. The subjects presented in the two courses are those about which every young farmer should have definite and clear knowledge. In their treatment the topics are handled in such a way as to make the information to the student useful in the highest possible degree.

There is no longer any question concerning the value of advanced, definite knowledge concerning agriculture to those who follow farming. Education and training pay on the farm as they do elsewhere in life.

The expenses of the course are so little, and the good to be derived so great, no young man in North Carolina can afford to miss the opportunity of getting this training so necessary in his work. The money necessary to meet the expenses for a whole term's instruction can be earned in a month or two before attending. Therefore no young man, even though he possess but a few dollars, can afford to miss the opportunity for training in his work.

The studies offered are dairying, stock-raising, creamery practice, stock-feeding, diseases of farm animals, dairy-farming, breeding farm animals, entomology, dairy chemistry, farm economics, and bookkeeping. The class-room work is supplemented by practice in the creamery, barn, greenhouse, and workshop.

Equipment.—The work in dairying, which includes butter-making, milk-testing, handling cream separators, pasteurizing cream and milk, and dairy bacteriology, is given in the Dairy Building. The building is equipped with separators, milk-testers, pasteurizer, and all tools required in making butter and preparing milk or cream for the city markets.

Requirements for Admission.—No entrance examination is required, but the students taking either the Dairy or Winter Course must be at least eighteen years of age and should have a common-school education.

Expenses—College Dues.—Each student is required to pay a laboratory fee of five dollars. Tuition and instruction are entirely free.

Other Expenses.—Books and note-paper will cost from two to three dollars, and two white duck suits to wear in the dairy laboratory will cost one dollar each. The suits, however, are not required.

Board and room may be secured for three dollars a week. The total expenses of the whole ten weeks need not exceed thirty dollars.

Ib. The Winter Course in Agriculture and Dairying.

Butter-making.—This course includes all practical operations of creamery management. The student works with the guidance and under the direction of the instructor at the same operations of butter-making, or pasteurizing, or milk-testing, until proficiency is obtained. He is required to follow the milk from the time it enters the laboratory and creamery until the product leaves it, and determine the points in processes where losses occur and reasons why they occur. Six periods. Mr. KENDALL.

Milk and Butter Production.—This course consists of lectures and recitations on the methods of taking care of milk and the manufacturing of it into other products, also lectures upon construction, equipment and operation of creameries, dairies, and milk depots. Each student is required to draw a plan of a farm dairy and prepare an estimate for equipment of same. Two periods. Mr. KENDALL.

Feeds and Feeding and Stock-raising.—This subject consists of an elementary study of the composition of foods; the constituents of feeding, amount, combination and form necessary to give best results with various kinds of live stock.

The student is required to calculate digestibilities and nutritive ratios and to arrange therefrom proper feeding rations. Two periods. Professor BURKETT.

Dairy Farming.—Lectures are given under this subject upon the history, adaptation, care and management of the different breeds of dairy cattle. Dairy animals are studied by the score card, in accordance with the practice of judging animals for dairy purposes.

Instruction will also be given upon the character of food-stuffs, the relation of food to the animal, and kind and quality of food for the best milk production. Two periods. Professor BURKETT.

Soil Study.—Lectures and recitations upon composition, formation, kinds and physical properties of soil and their improvement by cultivation, natural and artificial fertilizers, drainage, etc.

The work in class-room is supplemented by work in the field and soil physics laboratory. One period. Assistant Professor MCCLELLAND.

Farm Crops.—In this subject is included rotation of crops, green manuring, and a critical study of corn and cotton; judging of corn; condition of germination and growth, and improvement by selection and breeding. One period. Assistant Professor MCCLELLAND.

Soils and Fertilizers.—Lectures on fertilizers and fertilizing materials and on the typical classes of North Carolina soils. Two periods. Director KILGORE.

Farm Chemistry.—Lectures on air, water, the chemistry of plant and animal nutrition, and the composition of milk and its products. Two periods. Professor WITHERS.

Plants.—This course treats of plants in general, embracing such subjects as plant breeding, seed selection, seed testing, plant propagation, nutrition, and classification, plant diseases and their prevention, and bacteria and fungi in their relation to farm produce, treating of both the beneficial bacteria of farm processes, treating of both the bacteria beneficial in farm operations and of injurious bacteria which produce disease, etc. Two periods. Professor STEVENS.

Economic Entomology.—This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Two periods. Mr. WOGLUM.

Diseases of Live Stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live stock to prevent disease and the treatment of some of the most common diseases. Four periods. Professor BUTLER.

AGRICULTURE.

Equipment.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and twenty-five acres, with two hundred and fifty acres under cultivation; a large three-story basement barn, 50 by 72 feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The Dairy Building contains three rooms and cellar, and is supplied with De Laval, Sharples, United States, Empire, National, and Reid Separators, Babcock Testers, various kinds and makes of churns, butter-workers, and cheese apparatus, etc.

The live stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The poultry-yards contain the following breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas, and Pekin Ducks.

Subjects of Instruction.

1. Breeds of Live Stock.—Lectures and recitations upon the history, characteristics, care and management, and adaptation of the different breeds of live stock. Practical exercises are given in scoring and judging the various kinds of live stock with the score card. Four periods, first term. For Sophomores and second-year students. Professor BURKETT.

2. Thremmatology.—Lectures and recitations upon the laws of inheritance, and the principles and phenomena of evolution as applicable to the improvement of animals or plants. The aim is to bring every known principle of reproduction to the assistance of the breeder's art. Practical exercise in scoring and judging live stock, and in writing and tracing pedigrees. Four periods, second term. For Sophomores and second-year students. Professor BURKETT.

3. Stock-feeding and Hygiene.—Lectures and exercises upon the laws of nutrition, and the character of food-stuffs, and the kind and quality of foods to produce certain results. Practical exercises in calculating digestibility, nutritive ratios, and feeding standards. Four periods, third term. For Sophomores and second-year students. Professor BURKETT.

4. Farm Equipment.—Lectures and recitations upon selecting, planning and equipping farms; planning and erecting farm buildings; farm vehicles and machinery; power, water, and drainage; practical exercise in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Four periods, first term. For Juniors and second-year students. Assistant Professor MCCLELLAND.

5. Soils.—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, and fertilizers,

and mechanical analysis. Four periods, second term. For Juniors and second-year students. Assistant Professor McClelland.

6. Farm Crops.—Lectures and recitations upon the history, production, harvesting and marketing of farm crops. Practical exercise with growing and dried specimens of farm crops, including grasses, clovers, and other forage crops. Four periods, third term. For Juniors and second-year students. Assistant Professor McClelland.

7. Farm Machinery.—Lectures and laboratory work on the tools and machinery of the farm, in reference to their design, construction, draft, durability, and care. The student is required to set up and test the various machines used on the farm. One period, third term. For second-year students. Assistant Professor McClelland.

8. Animal Husbandry.—A critical study of the horse; his breeding and management; gaits; practice in expert judging of horses. Two periods, first term. For Seniors. Professor Burkett.

9. Animal Husbandry.—A critical study of beef and dairy cattle; the breeding, feeding and management, and practice in expert judging of cattle. Two periods, second term. For Seniors. Professor Burkett.

10. Animal Husbandry.—A critical study of sheep and swine in reference to type, wool or mutton, pork or bacon. The breeding, feeding and management of sheep and swine, and practical exercise in expert judging of sheep and swine. Two periods, third term. For Seniors. Professor Burkett.

11. Agronomy.—A critical study of the farm crops, corn and cotton; judging corn; conditions of germination and growth, and improvement by selection and breeding. Three periods, first term. For Seniors. Assistant Professor McClelland.

12. Special Crops.—Special crops will be studied by the student in the laboratory and field. Three periods, second term. For Seniors. Assistant Professor McClelland.

13. Soil Physics and Management.—This course is designed for advanced work in the study of soils, both in the laboratory and the field. Three periods, third term. For Seniors. Assistant Professor McClelland.

14. Dairying.—Practice and occasional lectures. The course consists in general management of modern dairying, the methods of milk analysis, the bacteriology of milk, the use of separators, the testing of milk, ripening of cream, churning, working, packing, and scoring butter. Five periods, third term. For Freshmen. Five periods, first term. For first-year students. Professor Burkett and Mr. Kendall.

15. Dairy Bacteriology.—A laboratory course in the study of bacteria in its relation to creamery, butter-making, and cheese production. Three periods, first term. For Seniors. Mr. KENDALL.

16. Experimental Dairying.—Laboratory practice in making butter and cheese. Three periods, second term. For Seniors. Mr. KENDALL.

17. Dairy Seminary.—Laboratory practice in making butter and cheese of special commercial importance. Three periods, third term. For Seniors. Mr. KENDALL.

18. Farm Management.—Lectures upon the history of agriculture; present agricultural methods in various counties, cost and relation, profits of various farm operations and systems. Two periods. For Seniors. Professor BURKETT.

HORTICULTURE.

The Horticultural Department occupies Primrose Hall and the greenhouses connected with it. This building contains an excellent class-room and two good laboratories. The laboratories are used for such work as seed-testing, seed selection, bud studies, budding, grafting, making of cuttings, transplanting, and mixing of spraying materials.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many interesting exotic plants; a large amount of laboratory work is also carried on in these houses.

The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed-testing, budding knives, grafting tools, pruning shears and saws, and spray pumps.

The College campus is used in teaching ornamental gardening, and a study of economic trees and shrubs.

Subjects of Instruction.

21. General Horticulture.—This course consists of text-book and lecture work. It deals with the fundamental principles of Horticulture, as seed propagation, pruning, frosts, culture. Class-room and laboratory work. Five periods, first term. Required of Freshmen. Five periods, second term. Required of first-year students. Mr. REIMER.

22. Vegetable Gardening.—Text-book and lectures, accompanied by laboratory work. This course deals with the selection and prepara-

tion of soil, making of hot-beds and cold-frames, fertilizing, handling of seeds, irrigation, transplanting, marketing and storing, and the culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen. Five periods, third term. Required of first-year students. Mr. REIMER.

23. Landscape Gardening.—This course deals with the planning, arrangement and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially lawns, trees and shrubs, flowers and flower-beds, and the grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Mr. REIMER.

24. Fruit Culture.—A course dealing with the location, soil, cultivation, fertilizing, pruning, spraying, harvesting and marketing of all the principal North Carolina fruits. Five periods, first term. For Seniors. Professor HUME and Mr. REIMER.

25. Forestry.—This course consists of a thorough study of the fundamentals of forestry. It deals especially with the need, influence, formation, care and improvement of forests. Also the cutting, use, and handling of forest products. A study is made of the various forest trees of greatest importance in America. Five hours, second term. For Seniors. Mr. REIMER.

26. Horticultural Literature.—During the last term the Seniors are given an opportunity to take up any special line of horticultural work they desire. The work will consist of a thorough study of all important literature on the particular subject the student is interested in. In class each student will be required to give a condensed account of his particular line of investigation as the work progresses. Required of horticultural students. Five hours, third term. For Seniors. Professor HUME and Mr. REIMER.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture-room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, an incubator-room, and a cold-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pres-

sure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fire-proof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

Subjects of Instruction.

31. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field-work and simple independent investigations. Three periods. Required of Freshmen and first-year students. Professor STEVENS.

32. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor STEVENS.

33. Economic Botany.—A study of the more important groups of economic plants, weeds and medicinal plants, seed-testing, nitrification, dentrification, and nitrogen fixation, origin of cultivated plants and of bacteria and fungi in their relation to Agriculture. Two periods, third term. Elective for Seniors. Professor STEVENS.

34. Plant Diseases.—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores and second-year students. Professor STEVENS.

35. **Plant Disease (Advanced).**—Methods of culture and investigation of plant disease. This course is intended to prepare the student for original investigation in plant diseases. Two periods, first term. Elective for Seniors. Professor STEVENS.

36. **General Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor STEVENS and Mr. TEMPLE.

37. **Bacteriology (Advanced).**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Two periods. For Seniors. Professor STEVENS.

VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live stock. In addition to the work required of all students in the Agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the Agricultural courses.

41. **Veterinary Anatomy.**—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors and second-year students. Doctor ROBERTS.

42. **Veterinary Medicine.**—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors and second-year students. Professor BUTLER and Doctor ROBERTS.

43. **Veterinary Practice.**—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics,

which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Four periods, third term. Required of Juniors and second-year students. Professor BUTLER and Doctor ROBERTS.

44. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. Three periods. For Seniors. Professor BUTLER.

ZOOLOGY.

46. Elementary Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and reading. One term is devoted to vertebrates and invertebrates, exclusive of insects, but including some of the common parasites infesting man and the domestic animals. This course is intended to present a general view of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Four periods, first term. Required of Freshmen and first-year students. Doctor ROBERTS.

47. Animal Physiology.—A comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory experiments to illustrate principles of physiology. Four periods, second and third terms. Required of Freshmen and first-year students. Doctor ROBERTS.

ENTOMOLOGY.

51. Elementary Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade, and ornamental plants; *f*, of barn, mill, and household. Lectures and demonstrations. Three periods, second term. Required of Sophomores and second-year students. Mr. SHERMAN and Mr. WOGLUM.

52. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life-history and habits. Lectures and laboratory practice. Two periods, second and third terms. For Seniors and Juniors. Mr. SHERMAN and Mr. WOGLUM.

GEOLOGY.

58. Geology.—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The re-

sults of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors. Dr. WALKER.

CHEMISTRY.*

61. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS, Mr. BAGLEY, and Mr. HARPER.

62. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

63. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Elective for Seniors. Professor WITHERS.

64. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Nine periods, first term. Elective for Seniors. Dr. WALKER.

65. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Nine periods, second and third terms. Elective for Seniors who have taken Course 64. Dr. WALKER.

*For further information, see course in Chemistry.

66. Agricultural Chemistry.—Ingle's *Agricultural Chemistry.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

68. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries, particularly those whose raw materials are supplied by agriculture or whose products are utilized in agriculture. Two periods. Elective for Seniors. Professor WITHERS.

PHYSICS.*

71. Elementary Physics.—Properties of matter; fundamental units. British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. SPRAGUE.

DRAWING.†

76. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Sophomores. Mr. ST. AMANT.

77. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Sophomores. Mr. ST. AMANT.

SHOP-WORK.†

78. Wood-work.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. One period, first and second terms. Required of Juniors. Required of second-year students. Mr. CLAY.

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*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shop-work, drawing, and other Mechanical Engineering subjects, see course in Mechanical Engineering.

79. **Forge-work.**—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. One period, first and second terms. For Juniors. One period, third term. Mr. DEAL.

80. **Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines; methods of wood-working and forging; care of belting and shafting. One period, first and second terms. For Juniors and second-year students. Mr. CLAY.

MATHEMATICS.*

82. **Arithmetic.**—Begin with decimal fractions and complete the subject. Five periods, first term. Milne's *Standard Arithmetic.* Required of first-year students. Mr. J. A. PARK.

83. **Algebra.**—Up to quadratic equations. Wells' *Higher Algebra.* Five periods, second and third terms. Required of first-year students. Mr. J. A. PARK.

84. **Advanced Algebra.**—Wells' *Higher Algebra.* Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Four periods, first term. Required of Freshmen. Mr. YATES.

85. **Geometry.**—Plane and solid. Wentworth's *Plane and Solid Geometry.* Four periods, second and third terms. Required of Freshmen. Mr. YATES.

ENGLISH.

87. **English Composition.**—A drill on the forms of the language, the correct relation of words, the sentence, and the paragraph. Daily written exercises. Three periods. Required of first-year students. Doctor SUMMEY and Mr. MASON.

88. **Introductory Composition and Rhetoric.**—This course in the fundamentals of rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. MASON.

89. **Rhetoric, Criticism, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. MASON.

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*For full information in regard to Mathematics, see course in Civil Engineering.

90. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

91. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. MASON.

92. English Literature.—The development of English literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, second and third terms. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

HISTORY.

93. English History.—The text is supplemented by lectures on important periods. Two periods, first term. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

95. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book, Parsons' *Laws of Business.* One period, first half year. Required of Juniors. President WINSTON.

96. Civics.—This course includes instruction in the rights and duties of citizenship, with special reference to the laws of North Carolina. One period, second half year. Required of Juniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—This course deals with public problems relating to the production, distribution and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods, first half year. Required of Seniors. President WINSTON.

98. Government.—The Constitutional History of the United States and North Carolina; relations between the State and Federal governments, etc. Lectures and texts. Two periods, second half year. Required of Seniors. President WINSTON.

MILITARY SCIENCE.

99. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first term. Two periods, second and third terms. Required of all classes except Seniors. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant HEATON.

ENGINEERING COURSES.

Four-year Courses in

II. Civil Engineering.
III. Mechanical Engineering.
IV. Electrical Engineering.
V. Mining Engineering.
VI. Industrial Chemistry.
VII. Dyeing.

Two-year Courses in

IIIa. Mechanic Arts.
IVa. Applied Electricity.

COURSE IN CIVIL ENGINEERING.

The aim of the Course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and drafting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in drafting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately and quickly. Therefore a thorough course is given in Pure Mathematics and in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135 †	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Architecture, 115	2	--	--
Architectural Drawing, 116	2	2	2
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
Descriptive Geometry, 105	--	2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 102 and 103	2	2	2
Surveying (field-work), 104	2	2	2
Construction, 111	2	--	--
Drawing, 105	2	2	2
Graphic Statics, 101	--	2	2
Mechanics, 128	3	3	3
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Mechanics of Materials, 112	3	--	--
Construction, 111	--	2	2
Road-building, 113	2	--	--
Roofs and Bridges, 109	3	--	--
Bridge Design, 106	--	4	4
Municipal Engineering, 107	--	2	2
Surveying (field-work), 108	2	--	--
Hydraulics, 110	--	3	3
Calculus, 127	3	--	--
Geology, 211	2	2	2
Astronomy, 114	--	2	2
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field-work.

Subjects of Instruction.

101. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Professor RIDDICK.

102. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil and in Mining Engineering and of Seniors in Mechanical Engineering. Mr. LANG.

103. Railroad Engineering.—Reconnoissance, preliminary and location surveys, cross-sections, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Mr. LANG.

104. Surveying.—Field-work. Use of instruments, compass, level, transit and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes and platting. Two periods. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering.

105. Drawing.—Descriptive Geometry, Stereotomy. Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil Engineering. Mr. LANG.

106. Bridge Design.—Calculation of stresses, design, specifications and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

107. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

108. Surveying.—Field-work. Triangulation and topography, surveys for sewers, water-works, etc. Two periods, first term. Required of Seniors in Civil Engineering. Mr. MANN.

109. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and*

Bridges. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

110. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics.* Three periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

111. Construction.—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction.* Lectures. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Civil and Mining Engineering. Professor RIDDICK.

112. Mechanics of Materials.—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

113. Road-building.—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

114. Astronomy.—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

ARCHITECTURE.

115. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

116. Architectural Drawing.—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN.

MATHEMATICS.

121. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. J. A. PARK, Mr. MANN, and Mr. LANG.

122. Algebra.—Wells' *Higher Algebra.* Up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. MANN, Mr. LANG, and Mr. J. A. PARK.

123. Advanced Algebra.—Wells' *Higher Algebra.* Begin at quadratic equations; general theory of equations, solution of higher equations, etc. Five periods, first term. Required of Freshmen and of second-year students in Mechanic Arts. Mr. YATES and Mr. J. A. PARK.

124. Geometry.—Plane and Solid. Wentworth's *Plane and Solid Geometry.* Five periods, second and third terms. Required of all Freshmen and of second-year students in Mechanic Arts. Five periods, first term. Required of Sophomores. Mr. YATES and Mr. J. A. PARK.

125. Trigonometry.—Five periods, second and third terms. Required of Sophomores. Mr. YATES.

126. Analytical Geometry.—Nichols' *Analytical Geometry.* Conic sections, higher plane curves, Geometry of three dimensions. Four periods, first and second terms. Required of Juniors in Engineering. Mr. YATES.

127. Calculus.—Osborne's *Elements of Calculus.* Differential and integral elements of differential equations. Four periods, third term. Required of Juniors. Three periods, first term. Required of Seniors in Engineering. Professor RIDDICK and Mr. YATES.

128. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil and Mining Engineering. Mr. LANG.

COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular Four-year Course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering work, and also to furnish him with a basis to carry on more advanced engineering studies. It treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers and engines.

The Two-year Course is offered to students who wish to become machinists, draughtsmen, stationary engineers, or dynamo tenders.

The courses follow closely the methods adopted by the large manufacturing companies, both in drawing-room system and shop methods.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Boilers, 157	2	--	--
Steam Engines, 158	--	2	--
Valve Gears, 159	--	--	2
Applied Mechanics, 169	3	3	3
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Dynamo Machinery, 183	2	2	2
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Machine Design, 141	2	3	3
Machine-shop Work, 151	3	3	3
Power Plants, 161	--	--	2
Gas Engines, 162	2	--	--
Refrigeration, 163	--	2	--
Heating and Ventilation, 166	--	1	1
Pumping Machinery, 165	--	1	--
Structural Engineering, 167	--	--	1
Mechanics of Materials, 112	3	--	--
Steam Engineering Laboratory, 168	2	2	2
Surveying, 102 and 104	2	2	2
Calculus, 127	3	--	--
Hydraulics, 110	--	3	3
English, 276 and 274, or Political Economy, 297, 298	2	2	2
Military Drill, 299	3	2	2

IIIa. The Two-year Course in Mechanic Arts.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	4	--	--
Mechanical Drawing, 136	--	4	--
Descriptive Geometry, 137	--	--	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 121	5	--	--
Algebra, 122	--	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

Mechanical Drawing, 171	2	2	2
Machine-shop Work, 150	3	3	3
Drawing, 171, or Machine-shop Work, 150	3	3	3
Mechanical Technology, 172	1	1	1
Steam and Steam Machinery, 173	2	2	2
Physics, 195, Drawing, 171, or Shop-work, 150	5	--	--
Electricity, 196, Drawing, 171, or Shop-work, 150	--	5	--
Electrical Laboratory, 197, Drawing, 171, or Shop-work, 150	--	--	5
Algebra, 123, Drawing, 171, or Shop-work, 150	5	--	--
Geometry, 124, Drawing, 171, or Shop-work, 150	--	5	5
Military Drill, 299	3	2	2

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation-rooms and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop, office and library. On the second floor are the recitation-room, two drawing-rooms, and a wood-finishing room. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine, a one-horse-power gasoline engine (all of which were built by students), a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a 4½ x 6 x 6 Blake air-pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a water-motor, a Worthington water-meter, a complete Westinghouse air-brake equipment, a New York air-brake equipment in section, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The boiler-house is equipped with one thirty-horse-power and two forty-horse-power horizontal return tubular boilers and two seventy-five-horse-power Babcock and Wilcox boilers and several pumps, all of which are available for experimental purposes.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 30-inch band saw; a jig saw; a shaper or edge-moulding machine,

with a very complete set of moulding cutters; a 38-inch grind-stone; a wood trimmer; an adjustable miter-box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well-lighted and ventilated, neatly-paved room, 30 x 40 feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis and Eagan lathe with 10-foot bed, a 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, a 32-inch American drill press, a Brown & Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe-threading and cutting machine, a Greenwich arbor press and an electric center grinder. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a twenty-five-horse-power Woodbury engine. When the shops are running one of the students has charge of the engine.

Subjects of Instruction.

135. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing. Two periods, first term. Required of Freshmen. Four periods, first term. Required of first-year students. Mr. St. Amant.

136. Elementary Mechanical Drawing.—Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen. Four periods, second term. Required of first-year students. Mr. St. Amant.

137. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods, third term. Required of Freshmen. Four periods, third term. Required of first-year students. Mr. St. Amant.

139. Mechanical Drawing.—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering, Chemistry and Dyeing. Mr. LAWRANCE.

140. Machine Design.—Study of the communication of motion by gear wheels, cams, belts, and link-work; automatic feed, parallel and quick motions. Epicylic trains. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical Engineering. Mr. LAWRANCE.

141. Machine Design.—Estimating, checking of working drawing, original design. Calculations and working drawings of types of engines, boilers, pumps, condensers, shafting, etc. Two periods, first term. Three periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. LAWRANCE.

Students are required to stamp their drawings with the College stamp, similar to the practice in the drawing-rooms of the large manufacturing companies. Encouragement is given to original design, especially when carried through the shops to a complete working machine.

146. Wood-work.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Two periods. Required of Freshmen. Two periods. Required of first-year students. Mr. CLAY and Mr. DEAL.

147. Forge-work.—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Required of Freshmen and first-year students. Mr. DEAL.

148. Forge-work.—Exercises in working with steel. Tempering. Case-hardening. One period, first term. Required of Sophomores in Mechanical, Electrical, and Mining Engineering, Chemistry and Dyeing. Mr. DEAL.

149. Pattern-making.—Exercises in making patterns and moulds of machine parts. One period, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering, Chemistry and Dyeing. Mr. CLAY.

150. Machine-shop Work.—Bench and machine-work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Three periods. Required of second-year students in Mechanic Arts. Mr. PARK.

151. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Three periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

152. Mechanical Technology.—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of first-year students in Mechanic Arts. Mr. CLAY.

157. Boilers.—Steam generation; types, care and management; fittings and appliances; corrosion and incrustation; combustion of fuel. Boiler power. Two periods, first term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and in Mining Engineering and in Dyeing. Professor THOMAS.

158. Steam Engines.—Types—simple and compound, and triple expansion, automatic, Corliss, rotary, turbines. Care and management. Indicators, indicated and brake horse-power. Condensers. Two periods, second term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and Mining Engineering and in Dyeing. Professor THOMAS.

159. Valve Gears.—Plain slide valve, balance valve, Corliss and other form valve gears, link and radial reversing gears. Shaft governors. Bilgram and Zenner valve diagrams. Two periods, third term. Required of Juniors in Mechanical Engineering, and of Seniors in Mining Engineering and in Dyeing. Professor THOMAS.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

162. Gas Engines.—Theory of the gas engine. Various types of gas, gasoline, and oil engines. Brake and indicated horse-power; efficiency. Gas producers. Two periods, first term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Compressed-air machines. Two periods, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Water-works machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. One period, second and third terms. Required of Seniors in Mechanical Engineering. Professor THOMAS.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. One period, third term. Required of Seniors in Mechanical Engineering. Mr. LAWRANCE.

168. Steam Engineering Laboratory.—Practice in engine running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Two periods. Required of Seniors in Mechanical Engineering. One period. Required of Seniors in Electrical Engineering. One period, third term. Required of second-year Mechanic Arts and Applied Electrical students. Professor THOMAS and Mr. LAWRANCE.

169. Applied Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. LAWRANCE.

171. Mechanical Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Required of second-year Mechanic Arts students. Two periods, first term. Required of second-year students in Applied Electricity. Mr. LAWRANCE.

172. Mechanical Technology.—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangements and sizes of belting, pulleys, and shafting. One period. Required of second-year students in Mechanic Arts and Applied Electricity. Professor THOMAS.

173. Steam and Steam Machinery.—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Two periods. Required of second-year students in Mechanic Arts and Applied Electricity. Professor THOMAS.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. Only a

most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student, he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.

A two-year course in Applied Electricity is offered to those who wish to fit themselves for positions as dynamo-tender, motorman, or electrician.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Dynamo Machinery, 183	2	2	2
Electrical Laboratory, 180	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Applied Mechanics, 169	3	3	3
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Alternating Currents, 184	3	--	--
Electric Power Transmission, 185	--	3	--
Electric Light and Railway Systems, 186	--	--	3
Electrical Engineering (laboratory), 189	4	--	--
Electrical Engineering (laboratory), 190	--	4	4
Electrical Design, 191	2	2	2
Electrical Engineering, 192	--	--	2
Boilers, 157	2	--	--
Steam Engines, 158	--	2	--
Steam Engineering (laboratory), 168	1	1	1
Calculus, 127	3	--	--
Hydraulics, 110	--	3	3
Political Economy, 297 and 298	2	2	2
English Literature, 276 and 274	2	2	2
Military Drill, 299	3	2	2

IVa. The Two-year Course in Applied Electricity.

First Year.

Free-hand Drawing, 135	4	--	--
Mechanical Drawing, 136	--	4	--
Descriptive Geometry, 137	--	--	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 121	5	--	--
Algebra, 122	--	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Physics, 195	5	--	--
Electricity, 196	--	5	--
Electrical Laboratory, 197	--	--	5
Electrical Construction, 198	--	2	2
Mechanical Drawing, 171	2	--	--
Machine-shop Work, 150	2	2	2
Mechanical Technology, 172	1	1	1
Steam Engineering Machinery, 173	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Military Drill, 299	3	2	2

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Four periods. Required of Freshmen. Professor PAINE.

177. Elementary Lessons in Electricity and Magnetism.—Two periods. Required of Sophomores. Professor PAINE.

178. Physical Laboratory.—Fundamental measurements of length, mass, and time. Determination of laws and forces, velocities, friction, and periodic motion. Study of mechanical advantage and efficiency of simple machines. The strength of various metals and wood. One period. Required of Freshmen. Mr. SPRAGUE.

179. Physical Laboratory.—Continuation of Course 178. Expansion of metals, latent heat of steam. Elementary experiments in electricity and magnetism. One period. Required of Sophomores in Electrical and Mechanical Engineering. Mr. ADAMS.

180. Electrical Laboratory.—Use of laboratory instruments. Measurement of resistance, current, and electro-motive force. Use of condensers. Electrical testing of lines for insulation and grounds. Magnetic properties of iron. Two periods. Required of Juniors in Electrical Engineering. Mr. ADAMS.

ELECTRICAL ENGINEERING.

Equipment.

The electrical engineering laboratory is a small brick building 30 by 50. It contains the electric light plant, consisting of a 35-horse-power automatic Skinner engine, an 11.5 K. W. 110-volt Westinghouse dynamo, a 30 K. W. 3-phase 550-volt Westinghouse alternator, and a 20 K. W. 2-phase 110-volt Lincoln alternator. The laboratory contains in addition to this one 6-light T. H. arc machine, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens & Halske dynamo, connected in such a way as to give 3-phase currents, one 2-horse-power 3-phase 110-volt Gen. Elect. Co. motor, one 2 K. W. 110-volt LaRoche alternator. It also contains transformers, condensers, arc lamps, circuit breakers, etc.

The department possesses a small library of standard books on all branches of physics and electrical engineering.

183. Dynamo Machinery.—A study of direct current dynamos and motors. Efficiency. Characteristic curves. Required of Juniors in Mechanical and Electrical Engineering. Two periods. Professor PAINE.

184. Alternating Currents of Electricity.—Principles of alternating currents. Alternating current generators and motors. Static and rotary transformers. Three periods, first term. Required of Seniors in Electrical Engineering. Professor PAINE.

185. Electric Power Transmission.—Direct current systems. Power transmission by single and polyphase alternating currents. Long distance, high potential lines. Three periods, second term. Required of Seniors in Electrical Engineering. Professor PAINE.

186. Electric Light and Railway Systems.—The design and operation of lighting and railway plants. Estimates of costs. Three hours, third term. Required of Seniors in Electrical Engineering. Professor PAINE.

189. Electrical Engineering Laboratory.—Laboratory methods. Calibration of electrical measuring instruments. Study of direct current apparatus. Characteristic curves. Photometry. Efficiency of direct current generators and motors. Four periods, first term. Required of Seniors in Electrical Engineering. Mr. ADAMS.

190. Electrical Engineering Laboratory.—Characteristic curves of alternating current generators. Study of inductance and capacity. Efficiency of alternating current apparatus, including motors, generators and transformers. Four periods, second and third terms. Required of Seniors in Electrical Engineering. Mr. ADAMS.

191. Electrical Design.—The design of magnets, rheostats, dynamos, and transformers. Two periods. Required of Seniors in Electrical Engineering. Mr. ADAMS.

192. Electrical Engineering Practice.—The application of electricity for lighting and power. Electricity in cotton mills and machine shops. Two periods, third term. Required of Seniors in Electrical Engineering. Professor PAINE.

195. Physics.—The properties of matter. Mechanics. The principles of the simple machines. Five periods. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. SPRAGUE.

196. Electricity.—Principles of the electric circuit. Batteries. Electro-magnets. Dynamos. Motors. Electric bell, telephone, and telegraph systems. Five periods, second term. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. SPRAGUE.

197. Electrical Laboratory.—Management of dynamos and motors. Care of station equipment. Study of arc lamps. Transformers. Five periods, third term. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. SPRAGUE.

198. Electrical Construction.—Bell wiring. Electric light wiring. Coil winding for dynamo and motor fields. Armature winding. Repair of electrical apparatus. Two periods, second and third terms. Required of second-year students in Applied Electricity. Mr. ADAMS.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and

Geology, Surveying, Shop-work, Drawing, Machinery and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 111	2	--	--
Graphic Statics, 101	--	2	2
Surveying, 102 and 103	2	2	2
Surveying (field-work), 104	2	2	2
Drawing, 105	2	2	2
Mechanics, 128	3	3	3
Analytical Geometry, 126	4	4	--
Calculus, 127	--	--	4
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Mining, 293	--	4	4
Ore Dressing, 207	4	--	--
Geology, 211	2	2	2
Metallurgy, 208	--	2	2
Mineralogy, 212	4	--	--
Assaying, 209	--	2	2
Boilers, 157	2	--	--
Steam Engines, 158	--	2	--
Valve Gears, 159	--	--	2
Hydraulics, 110	--	3	3
Calculus, 127	3	--	--
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, sloping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining. Dr. WALKER.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining. Dr. WALKER.

208. Metallurgy.—Introductory: combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat-treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining. Dr. WALKER.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining. Dr. WALKER.

GEOLOGY AND MINERALOGY.

211. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors in Civil Engineering, in Mining, and in Chemistry. Dr. WALKER.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining. Dr. WALKER.

COURSES IN INDUSTRIAL CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in chemistry is arranged to prepare young men for careers in the analytical or the operating departments of the various chemical industries. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

Raleigh as a Chemical Center.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station are located in Raleigh, and through the courtesy of the officials in charge of these departments our students are welcomed whenever they desire to visit them.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

Chemical Equipment.

The laboratories of general and of analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine, with oak tops. Each student is provided with water, gas, all necessary re-agents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing oils, metallurgy of iron, metallurgy of copper, dyeing of cotton goods, in agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and nine other States.

VI. The Four-year Course in Industrial Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 123	5	--	--
Geometry, 124	--	5	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Agricultural Chemistry, 232	2	2	2
Organic Chemistry, 218	2	2	2
Analytical Chemistry, 220 and 226	9	9	9
Bacteriology, 251	2	2	2
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Industrial Chemistry, 233	2	2	2
Analytical Chemistry, 226	9	--	--
Synthetical Chemistry, 219	--	9	9
Geology, 211	2	2	2
Bacteriology, 252	2	2	2
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

COURSES IN DYEING.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dye-stuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, history, mathematics, physics and general chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	1	1	1
Weaving, 302	1	1	1
Mill Calculations, 305	1	1	1
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wook-work, 146	1	1	1
Forge-work, 147	1	1	1
Algebra, 123	5	--	--
Geometry, 124	--	5	5
Elementary Physics, 331	2	2	2
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Designing, 303	2	2	2
Geometry, 124	5	--	--
Trigonometry, 125	--	5	5
English, 273 and 275	3	3	3
Military Drill, 299	3	3	3

Junior Year.

Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 218	2	2	2
Analytical Chemistry, 220 and 226	9	9	9
English and History, 283 and 276	2	2	2
Business Law and Civics, 295 and 296	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Dyeing, 306	2	2	2
Industrial Chemistry, 233	2	2	2
Analytical Chemistry, 226	9	--	--
Synthetical Chemistry, 219	--	9	9
Boilers, 157	2	--	--
Engines, 158	--	2	--
Valve Gears, 159	--	--	2
English, 276 and 274	2	2	2
Political Economy, 297 and 298	2	2	2
Military Drill, 299	3	2	2

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS, Mr. BAGLEY, and Mr. HARPER.

217. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

218. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Required of Juniors in Chemistry. Professor WITHERS.

220. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Nine periods, first term. Required of Juniors in Chemistry and Dyeing. Dr. WALKER.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Nine periods, second and third terms. Required of Juniors in Chemistry and Dyeing. Nine periods, first term. Required of Seniors in Chemistry and Dyeing. Dr. WALKER.

228. Synthetical Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dye-stuffs is prepared and the properties studied. Nine periods, second and third terms. Required of Seniors in Chemistry and Dyeing. Dr. WALKER.

232. Agricultural Chemistry.—Ingle's *Agricultural Chemistry.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the

chemical standpoint. Two periods. Required of Juniors in Chemistry. Professor WITHERS.

233. **Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Two periods. Required of Seniors in Chemistry and Dyeing. Professor WITHERS.

BACTERIOLOGY.

251. **General Bacteriology.**—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor STEVENS and Mr. TEMPLE.

252. **Bacteriology, Advanced.**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS.

ENGLISH.

271. **English Composition.**—A drill on the forms of the language, the correct relation of words, the sentence, the paragraph. Daily written exercises. Three periods. Required of first-year students. Dr. SUMMEY and Mr. MASON.

272. **Introductory Composition and Rhetoric.**—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. MASON.

273. **Rhetoric, Criticisms, Essays.**—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. MASON.

274. **Argumentation.**—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

275. **American Literature.**—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. MASON.

276. **English Literature.**—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor HILL.

HISTORY.

281. **American History.**—By means of a text-book, supplemented by lectures and frequent assignment of topics for special study, students are in this course familiarized with the leading facts in the history of the United States. Two periods. Required of first-year students. Doctor SUMMEY and Mr. MASON.

283. **English History.**—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

295. **Business Law.**—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parson's *Laws of Business*. One period, first half year. Required of Juniors. President WINSTON.

296. **Civics.**—This course includes instruction in the rights and duties of citizenship, with special reference to the Laws of North Carolina. One period, second half year. Required of Juniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

297. **Political Economy.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The

leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. Two periods. President WINSTON.

298. Government.—The Constitutional History of the United States and North Carolina; relations between the State and Federal governments, etc. Lectures and texts. Required of Seniors. Two periods. President WINSTON.

MILITARY SCIENCE.

299. Drill.—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours. Required of all classes except Seniors. Commandant and Officers of the Battalion.

300. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Juniors. Lieutenant HEATON.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.
VIIIb. Special Ten-weeks Course in Carding and Spinning.
VIIIc. Special Ten-weeks Course in Weaving and Designing.

THE TEXTILE DEPARTMENT.

The Textile Department is located in a new building recently erected for its use. The instruction given in this department is in the theory and practice of cotton manufacturing. The building, which is a typical cotton mill, is fully equipped with all the necessary machinery for manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department three courses of instruction are offered, the Four-year Course leading to the degree of Bachelor of Engineering, the Two-year Course and the Ten-weeks Winter Course in carding and spinning, weaving, and designing.

Four-year Course.

The Four-year Course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The Two-year Course is offered to mature students who cannot spend the time required for the Four-year Course, or who have had considerable practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work. Students twenty years of age or over are admitted to this course without any examination.

Special Ten-weeks Courses.

Special Ten-weeks Courses are offered to practical mill men in carding and spinning, weaving and designing. These courses are given during the winter of each year, beginning with the opening of College in January and lasting until the middle of March. They aim to meet a demand from cotton-mill superintendents, overseers, and practical men for special instruction in the subjects named.

The textile instruction given is of a practical nature and covers the entire ground of cotton manufacturing. Its object is to prepare the student for a useful career in this industry. There is a demand from the mills in this and other States for young men technically trained in the manufacture of cotton goods, especially of the finer grades. That the graduates are meeting with success in this industry is shown by the positions held by them. Among these are president, secretary and treasurer, manager, superintendent, designer, overseer of weaving, mill architect, machinery salesman. In fact, the graduates have gone into almost every branch of cotton manufacturing and have met with success. All have received the same training. The point to which each has advanced has depended upon the ability to deal with the general problems of manufacturing.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus, just beyond the Horticultural Building. It is a two-story brick building 125 x 75 feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and classroom for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening-room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding-room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11 x 5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9 x 4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7 x 3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6 x 2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning-room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by

Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 72-spindle twister, one-half for wet, one-half for dry twisting, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by The T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; one Northrop-Draper sateen loom; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Two high-speed sheeting looms, made by Kilburn & Lincoln, Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2 x 1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One Crompton 4 x 1 box gingham loom, one Crompton 4 x 1 box loom with 20-harness dobby, one Crompton single-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4 x 4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One 2 x 1 box loom with 600-hook Jacquard machine, made by Joseph Battles Manufacturing Co., Lawrenceville, Mass. One 4 x 1 box table cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witches, for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room 70 x 50 feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, and alkalies, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of larger quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

Wm. J. Matheson & Co., Ltd., N. Y.
Farbenfabriken of Elberfeld Co., N. Y.
H. A. Metz & Co., N. Y. (successors to Victor Koechl & Co.).
Berlin Analine Works, N. Y.
A. Klipstein & Co., N. Y.
C. Bischoff & Co., N. Y.
Kuttroff, Pickhardt & Co., N. Y.
New York and Boston Dyewood Co., N. Y.
Schoelkoff, Hartford & Hanna Co., Buffalo, N. Y.
F. E. Atteaux & Co., Boston, Mass.
Read, Holliday & Sons, Ltd., N. Y.
Société Anonyne des Matiéres Colorantes, Paris.
O. S. Janney & Co., Philadelphia.
Geisenheimer & Co., N. Y.
Roessler and Hasslacher Chemical Co., N. Y.
Jas. S. and Thos. Elkington, Philadelphia, Pa.
Arabol Mfg. Co., N. Y.
Kalle & Co., N. Y.
Geigy Aniline and Extract Co., N. Y.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlins, Ltd., Pittsburg, Pa.

Belting, made by Faerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

Heating Plant.

Steam Coils and Blowing Fan, made by B. F. Sturtevant Co., Boston, Mass.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Ferm.
Free-hand Drawing, 316 †	2	--	--
Mechanical Drawing, 317	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Carding and Spinning, 301	1	1	1
Weaving, 302	1	1	1
Algebra, 336	5	--	--
Geometry, 337	--	5	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Mill Calculations, 304	1	1	1
Military Drill, 359	3	2	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Designing, 303	2	2	2
Geometry, 337	5	--	--
Trigonometry, 338	--	5	5
Inorganic Chemistry, 311	3	3	3
Inorganic Chemistry (laboratory), 312	2	2	2
English, 342 and 344	3	3	3
Military Drill, 359	3	2	2

* The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

† The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	2	2
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Machine-shop Work, 324	2	2	2
English and History, 347 and 345	2	2	2
Business Law and Civics, 348 and 349	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2

Senior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	3	3	3
Dyeing, 306	2	2	2
Boilers, 326	2	--	--
Engines, 227	--	2	--
Valve Gears, 328	--	--	2
English, 345 and 343	2	2	2
Political Economy, 351 and 352	2	2	2
Military Drill, 359	3	2	2

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	2	2
Free-hand Drawing, 316	2	--	--
Mechanical Drawing, 317	--	2	--
Descriptive Geometry, 318	--	--	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Arithmetic, 334	5	--	--
Algebra, 335	--	5	5
English, 341	3	3	3
Military Drill, 359	3	2	2

Second Year.

Carding and Spinning, 301	8	8	8
Weaving, 302	7	7	7
Textile Designing, 303	5	5	5
Military Drill, 359	3	2	2

Description of Subjects.

301. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning-room machinery. Cotton; classifying the plant, its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; card; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers and warpers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Required of Freshmen and

Sophomores, Juniors, and Seniors in the Four-year Course and of first and second-year students in the Two-year Course. Professor WILSON and Mr. STEED.

302. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation; pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing; steam cylinder slasher; hot air slasher; construction of slasher; creel; cylinders; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing; construction of size kettle; size mixing and boiling; division of sizing ingredients; values of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting; reels and harnesses; drawing in, and putting warps in loom. Looms; hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms; construction and advantages. Drop box looms; chain building for box looms; changing boxes to have easy running loom; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy running loom. Ball and shoe pick motion. Construction and fixing of head motion. Dobby; single and double action; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half-motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard, single and double lift; construction and tie up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing; inspection of cloth; singeing and brushing; calendaring; tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second-year students in the Short Course. Mr. NELSON.

303. Textile Designing.—Lectures and practice in designing; fabric structure and cloth analysis. Designing; method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves;

figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honey-comb weaves. Bedford cords and combinations with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piqués. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Fabric structure; textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Cloth analysis. Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen; worsted; silk; linen, and cotton yarns. Determination of one system of yarn to that of another. Required of Sophomores, Juniors and Seniors in the Four-year Course, and of first and second-year students in the Short Course. Mr. NELSON and Mr. SHUFORD.

304. **Mill Calculations.**—Calculations for speed of machines and parts. Yarn calculations, draft twist and production on cotton machinery. One period. For Freshmen. Professor WILSON.

306. **Dyeing.***—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalies, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the acts of bleaching and dyeing, such as the boiling out and

*See also the Four-year course in Dyeing, page 75.

bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyes and their application to cotton. After-treatment of direct colors, including diazotising and developing and the topping with basic colors. The application to cotton of basic colors, acid colors, mordant colors, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur colors, indigo, natural and artificial, aniline black, turkey red, and other insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalies and reducing agents on several samples taken from the different classes of dyestuffs. The use of hyraldite and other stripping agents.

Fraps' *Principles of Dyeing* is used as a text in connection with a course of lectures which will include the consideration of many difficult problems that arise in the dye-house. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

307. Dyeing Laboratory.—A series of experiments are performed which cover all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors, and the dyeing of sulphur colors. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a scrap-book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as the printing of samples on the laboratory printing machine. This work

will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

CHEMISTRY.*

311. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS, Mr. BAGLEY, and Mr. HARPER.

312. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs, under the eye of the instructor, experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

MECHANICAL ENGINEERING.†

316. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. ST. AMANT.

317. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen and first-year students. Mr. ST. AMANT.

318. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms; intersection development of surfaces, miscellaneous problems. Two periods, third term. Required of Sophomores. Mr. ST. AMANT.

320. Wood-work.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY and Mr. DEAL.

321. Forge-work.—Exercises in working with iron, welding; uses and care of forge-tools and fires. Two periods. Required of Freshmen. Mr. DEAL.

324. Machine-shop Work.—Bench and machine-work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Juniors. Mr. PARK.

*For further information, see course in Chemistry.

†For full information, see course in Mechanical Engineering.

326. Boilers.—Steam generation; types, care and management; fittings and appliances; corrosion and incrustation; combustion of fuel; boiler power. Two periods, first term. Required of Seniors. Professor THOMAS.

327. Steam-engines.—Types—simple and compound and triple expansion, automatic, Corliss, rotary. Care and management. Indicators, indicated and brake horse-power, condensers. Two periods, second term. Required of Seniors. Professor THOMAS.

328. Valve Gears.—Plain slide valve, balanced valves, Corliss and other form valve gears. Link and radial reversing gears. Shaft governors. Bilgram and Zenner valve diagrams. Two periods, third term. Required of Seniors. Professor THOMAS.

PHYSICS.*

331. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. SPRAGUE.

MATHEMATICS.†

334. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. MANN, Mr. LANG, and Mr. J. A. PARK.

335. Algebra.—Wells' *Higher Algebra,* up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. MANN, Mr. LANG, and Mr. J. A. PARK.

336. Advanced Algebra.—Begins at quadratic equations; general theory of equations; solution of higher equations, etc. Wells' *Higher Algebra.* Five periods, first term. Required of Freshmen. Mr. YATES and Mr. J. A. PARK.

337. Geometry.—Plane and solid. Wentworth's *Plane and Solid Geometry.* Five periods, second and third terms. Required of Freshmen. Five periods, first term. Required of Sophomores. Mr. YATES and Mr. J. A. PARK.

338. Trigonometry.—Five periods, second and third terms. Required of Sophomores. Mr. YATES.

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*For full information, see course in Electrical Engineering.

†For full information, see course in Civil Engineering.

ENGLISH.

341. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill upon grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. MASON.

342. Rhetoric, Criticisms, Essays.—The student is taught the essentials of good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, second term. Professor HILL, Doctor SUMMEY, and Mr. MASON.

343. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

344. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. MASON.

345. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

347. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

348. Business Law.—Parson's *Laws of Business*. This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parson's *Laws of Business*. One period, first half year. Required of Juniors. President WINSTON.

349. Civics.—This course includes instruction in the rights and duties of citizenship, with special reference to the Laws of North Carolina. One period, second half year. Required of Juniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

351. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Two periods, first half year. Required of Seniors. President WINSTON.

352. Government.—The Constitutional history of the United States and North Carolina; relations between the State and Federal governments, etc. Lectures and texts. Two periods, second half year. Required of Seniors. President WINSTON.

MILITARY SCIENCE.

359. Drill.—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours first term, two periods second and third terms. Required of all classes except Seniors. Commandant and Officers of the Battalion.

360. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant HEATON.

NORMAL COURSES.

I. For Rural Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) Summer Course.
II. For City Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) Summer Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education is being introduced into our public schools, and the College has a constant demand for well-trained industrial teachers. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short courses or the Summer Courses, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the colleges, except in the Summer Courses.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Nature Study { Plants	3	3	3
Nature Study { Animals	3	3	3
English	3	3	3
Mathematics	5	5	5
Military Drill	3	2	2

Second Year.

Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	2	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Farm Equipment, Soils, and Crops	4	4	4
Nature Study	3	3	3
Mathematics	4	4	4
English	3	3	3
Military Drill	3	3	3

II. Courses for City Teachers.

(*d*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Wood-work	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	3

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing	2	2	2
Wood-work	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	4	4	4
Military Drill	3	2	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology, Physiological Botany 3.

(*b*) ONE-YEAR COURSE.

Drawing	3	4	4
Wood-work	4	5	5
Forge-work	2	2	2
Architecture	2	--	--
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	2	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

DONATIONS.

The College makes thankful acknowledgment of the receipt of the following gifts during the year:

To the Textile Department.

Whitin Machine Works, Whitinsville, Mass.—Part value on 24-harness dobby loom; supplies for spinning and weaving machinery; part value on one set combing machinery; one sliver lap machine; one ribbon lap machine; one six-head combing machine.

Wm. Firth Co., Boston, Mass.—Part value on one 240-spindle mule. Asa Lees & Co., makers, Oldham, Eng.

Thomas Halton's Sons, Philadelphia, Pa.—One 400-hook Jacquard machine with harness; one 600-hook Jacquard machine with harness; one 624-hook table cover Jacquard machine with harness.

Crompton-Thayer Loom Co., Worcester, Mass.—Part value on one table-cover loom.

New England Butt Co., Providence, R. I.—Two braiding machines.

Berlin Aniline Works, N. Y.—Samples of dyestuff and color cards.

Continental Color and Chemical Co., N. Y.—Color cards.

H. A. Metz & Co., N. Y.—Samples of dyestuffs and color cards.

Kalle & Co., N. Y.—Five pounds Acme size; samples of dyestuffs; color cards.

Jas. S. and Thos. Elkington, Philadelphia, Pa.—Twenty pounds of bleachers' soap.

C. Bischoff & Co., N. Y.—Samples of dyestuffs and color cards.

Arabol Mfg. Co., N. Y.—Five pounds British gum, three pounds tragacanth, and one pound blood albumen.

A. Klipstein & Co., N. Y.—Samples of dyestuffs and color cards.

Roessler and Hasslacher Chemical Co., N. Y.—Plroride of sodium.

Cassella Color Co.—Samples of dyestuffs and color cards.

Courtesies Extended to Textile Department.

Textile Excelsior, Charlotte, N. C.
Textile Manufacturers' Journal, New York.
Fiber and Fabric, Boston, Mass.
Manufacturers' Record, Baltimore, Md.
Textile World, Boston, Mass.
Textile American, Boston, Mass.
The Manufacturer, Philadelphia, Pa.

The Tradesman, Chattanooga, Tenn.
American Industries, New York City.
Cotton, Atlanta, Ga.
Dixie, Atlanta, Ga.
American Cotton and Wool Reporter, Boston, Mass.
Mill News, Charlotte, N. C.
Dyers' Bulletin, Philadelphia, Pa.
The Dyer and Calico Printer, London, Eng.
The Chemical Trade Review and Dyers' Trade Journal, Phila., Pa.
Garment Dyers' Guide, Philadelphia, Pa.
Cassella Color Company, New York City.
Pilot Cotton Mills, Raleigh, N. C.
Caraleigh Cotton Mills, Raleigh, N. C.
Raleigh Cotton Mills, Raleigh, N. C.

To the Chemistry Department.

The Imperial Brush Company, Newark, N. J.—One scrubbing brush.
R. G. Mewborne, Louisville, Ky.—Sample of pure nicotine, and olton's Bibliography of Chemistry, with two supplements.
Sulphur Mining and Railroad Company, Richmond, Va., through W. White.—Samples of the different ores from the mine.

CATALOGUE OF STUDENTS.

GRADUATES.

Name.	*Post-office.*	*Course.*
Oscar Luther Bagley, B. S.,	Bagley,	Chem.
Richard Hugh Harper, B. S.,	Patterson,	Chem.
William Kerr, B. S.,	Bryson City,	Agr.
James Oscar Morgan,	Etowah,	Agr.
John Alsey Park,	Raleigh,	C. E.
James Clarence Temple, B. S.,	Sanford,	Agr.

SENIOR CLASS.

Durant Stewart Abernethy,	Hickory,	C. E.
George Gilderoy Allen,	Hiddenite,	Tex.
George Page Asbury,	Burkmont,	C. E.
James Claudius Beavers,	Morrisville,	Agr.
Needham Eric Bell,	Kinston,	Chem.
Kenneth Leon Black,	Mount Mourne,	C. E.
William Francis Brock,	Farmington,	C. E.
William Andrews Buys,	Havelock,	C. E.
Mark Hopkins Chesbro,	Claremont, Va.,	Agr.
Connor Calhoun Clardy,	Concord,	E. E.
David Mackenzie Clark,	Weldon,	C. E.
John Washington Clark,	Raleigh,	M. E.
James Duncan Clarke, Jr.,	Tampa, Fla.,	Chem.
Samuel Herbert Clarke,	Statesville,	C. E.
Wiley Theodore Clay,	Hickory,	M. E.
Duncan Archibald Cox,	Rowland,	Chem.
Alexander Doane Cromartie,	Garland,	Agr.
Latta Vanderion Edwards,	Merry Oaks,	C. E.
Benjamin Ballard Egerton,	Ingleside,	C. E.
Weldon Thompson Ellis,	Spencer,	M. E.
Albert Edward Escott,	Charlotte,	Tex.
William Carlyle Etheridge,	Manteo,	Agr.
James Beckett Ewart,	Hendersonville,	E. E.
Shirly Watson Foster,	Nance,	Agr.
Arthur Wynn Gregory,	Halifax,	Chem.
Horace Lester Hamilton,	Biltmore,	E. E.
John Frederick Hanselman,	Manson,	M. E.
Clarence Wilson Hewlett,	Wilson,	E. E.

Name.	*Post-office.*	*Course.*
James Allen Higgs, Jr.,	Raleigh,	C. E.
Cyrus Walker Hodges,	LaGrange,	M. E.
William Claude Huband,	Winston,	M. E.
Lester Lafayette Jordan,	Raleigh,	C. E.
William Graham Knox,	Charlotte,	Chem.
Martin Pearl Lipe,	Mint Hill,	Agr.
Joe Poindexter Lovill,	Pine Ridge,	C. E.
Thompson Mayo Lykes,	Tampa, Fla.,	C. E.
Horace Smith McLendon,	Ansonville,	Agr.
Raymond Maxwell,	Resaca,	C. E.
James Edwin Moore,	Williamston,	C. E.
Lacy Moore,	Graham,	C. E.
Joseph Graham Morrison,	Mariposa,	Agr.
Jesse Clarence Myrick,	Littleton,	E. E.
Charles Franklin Niven,	Morven,	Agr.
Lola Alexander Niven,	Cairo,	Agr.
Lewis Milton Oden,	Hunter's Bridge,	Agr.
Thomas Jefferson Ogburn,	West Lafayette, O.,	M. E.
Clyde Ester Parker,	Raleigh,	Chem.
Samuel Oscar Perkins,	Muttenz,	Chem.
Angelo Bettlena Piver,	Wilson,	C. E.
William Crawford Piver,	Wilson,	Chem.
Durant Waite Robertson,	Washington, D. C.,	Tex.
Freddie Jackson Talton,	Pikeville,	Agr.
Richard Henry Tillman,	Deep Creek,	E. E.
William Sidney Tomlinson,	Goldsboro,	C. E.
Reid Tull,	Kinston,	C. E.
Jackson Corpening Tuttle,	Lenoir,	E. E.
Robert Peel Uzzell,	Goldsboro,	Agr.
Peter Valaer, Jr.,	Winston,	Chem.
Lillian Lee Vaughan,	Franklin, Va.,	M. E.
John Harleigh Williams,	Rialto,	Tex.
Lewis Taylor Winston,	West Raleigh,	Agr.

JUNIOR CLASS.

Herbert Scandlin Battie,	Greensboro,	C. E.
Joe Pittman Bivens,	Goodman,	E. E.
Carney John Bryan,	Washington,	E. E.
Lindsay Ferguson Carleton,	Boomer,	E. E.
Robert Hill Carter,	Blackstone,	E. E.

Name.	*Post-office.*	*Course.*
Claud Council Dawson,	Grifton,	Tex.
Jacob Tatum Eaton,	Farmington,	Agr.
Seba Eldridge,	Dunn,	C. E.
Benjamin Bryan Everett,	Palmyra,	Agr.
John Lindsay Ferguson,	Kendal,	E. E.
Elias VanBuren Fowler,	Glenville,	E. E.
Clement Leinster Garner,	Beaufort,	C. E.
Lovic Rogers Gilbert,	Potecasi,	Tex.
Roy Joseph Gill,	Raleigh,	C. E.
Robert Strickler Graves,	Syria, Va.,	E. E.
John Clarence Grimes,	Lexington,	E. E.
George Rom Hardesty,	Wakefield,	E. E.
Philip William Hardie,	Brown Summit,	C. E.
Jokton Lafayette Hemphill,	Morganton,	E. E.
Lawrence James Herring,	Clinton,	Agr.
Guy Francis Hinshaw,	Winston-Salem,	C. E.
William Norman Holt,	Smithfield,	Tex.
Albert Carl Jones,	Trinity,	Agr.
William Whitmore Jones,	Franklin,	E. E.
Lafayette Frank Koonce,	Richlands,	Agr.
Charles Edward Latta,	Raleigh,	Tex.
Louis Edgar Lougee,	Raleigh,	Chem.
James Borden Lynch,	Wilmington,	C. E.
Henry Kreiger McConnell,	Rabbit Hash, Ky.,	Chem.
Oscar Franklin McNairy,	Greensboro,	C. E.
Eugene Franklin Meador,	Reidsville,	M. E.
Bennett Taylor Mial,	Raleigh,	M. E.
Frank Curtis Michael,	Gibsonville,	E. E.
John Maple Mills,	Raleigh,	M. E.
Henry Starbuck Montague,	Winston-Salem,	Chem.
John Lightfoot Morson,	Raleigh,	C. E.
James Elwood Overton,	Ahoskie,	Agr.
Thomas Frank Parker,	Hillsboro,	Agr.
Fred. Maynard Parks,	Morganton,	E. E.
Edward Newton Pegram,	Gastonia,	C. E.
Guy Pinner,	Elizabeth City,	C. E.
Winslow Gerald Pitman,	Lumberton,	M. E.
James Kemp Plummer,	Middleburg,	Chem.
Leon Jacob Schwab,	Goldsboro,	C. E.
John Oscar Shuford,	Gastonia,	E. E.
James Lawrence Smith, Jr.,	Linden,	C. E.

Name.	*Post-office.*	*Course.*
Ralph Hunter Smith,	New Bern,	M. E.
Jesse Page Spoon,	Oakdale,	Agr.
William Crawford Staples,	Reidsville,	Tex.
Vance Sykes,	Rock Spring,	C. E.
Nelson Hall Tate,	Littleton,	M. E.
Luther Russell Tillett,	Carolla,	C. E.
William Brooks Truitt,	Greensboro,	M. E.
John Ed. Turlington,	Clinton,	Agr.
Lindsey Marade Weaver,	Lexington,	M. E.
John Jackson Wells,	Elm City,	C. E.
David Lyndon White,	Trinity,	Agr.
Cecil Bernard Whitehurst,	Beaufort,	E. E.

SOPHOMORE CLASS.

Albert Edwin Abernethy,	Hickory,	Agr.
David Neill Allsbrook,	Scotland Neck,	C. E.
William Partee Ashcraft,	Charlotte,	Agr.
Frank Oscar Baldwin,	Raleigh,	Chem.
George Francis Bason, Jr.,	Charlotte,	E. E.
Hubert Beddoes,	Charlotte,	E. E.
Harwood Beebe,	Baltimore, Md.,	C. E.
William Lamar Black,	Mount Mourne,	M. E.
Leonard Anderson Blackburn,	Winston,	E. E.
Asa Gray Boynton,	Biltmore,	C. E.
Howard Miller Brooks,	Laurinburg,	C. E.
Frank Hamilton Brown,	Cullowhee,	Agr.
Neville Turner Brown,	Raleigh,	M. E.
William Bryant Burgess,	Rocky Mount,	E. E.
Gregg Holt Caldwell,	Davidson,	Agr.
Robert Calder Cantwell,	Wilmington,	C. E.
Herbert Fuller Carroll,	Raleigh,	Chem.
Arthur Gardner Coffin,	Greensboro,	C. E.
Louis Hill Couch,	Lexington,	E. E.
George Thomas Dunlap, Jr.,	Norwood,	E. E.
Tyler Bennett Dunlap,	Cedar Hill,	E. E.
Alvin Deans Dupree,	Greenville,	C. E.
Raymond Rowe Eagle,	Statesville,	M. E.
Minnie Luther Eargle,	Leesville,	Agr.
William Henry Eskridge,	Shelby,	C. E.
Isaac Herbert Farmer,	Wilson,	E. E.
Benjamin Troy Ferguson,	Kimbolton,	Agr.

Name.	*Post-office.*	*Course.*
Warren Goss Ferguson,	Southern Pines,	E. E.
Junius Talmage Gardner,	Shelby,	C. E.
Seth Mann Gibbs,	Middleton,	C. E.
Moses Henry Gold,	Beaufort,	C. E.
John David Grady,	Albertson,	Agr.
Edward William Gregory,	Elizabeth City,	M. E.
William Thomas Grimes,	Lexington,	Agr.
Thomas Delaware Grimshawe,	Montvale,	C. E.
Dorsey Yates Hagan,	Greensboro,	C. E.
Maurice Hendrick,	Shelby,	Tex.
Milton Walker Hunter,	Oxford,	E. E.
John McLaurin Jones,	Durham,	E. E.
Herbert William Kueffner,	Durham,	C. E.
Claude Milton Lambe,	Durham,	C. E.
Benjamin Bussey Lattimore,	Shelby,	C. E.
David Lindsay,	Stoneville,	Tex.
Will Thompson Lipscombe,	Greenville,	Chem.
George Lafayette Lyerly,	Hickory,	E. E.
Joseph Edmund Major,	Anderson, S. C.,	M. E.
Clarence Talmage Marsh,	Aulander,	C. E.
David John Middleton,	Warsaw,	Agr.
Robert Livingstone Murphy,	Morganton,	E. E.
David Wharey Newell,	Newell,	E. E.
John Shaw Pescud,	Raleigh,	M. E.
Paul Nathaniel Pittenger,	Raleigh,	M. E.
Benjamin Franklin Pittman,	Tarboro,	E. E.
Lawrence Lyon Pittman,	Whitakers,	C. E.
Louis Julien Poisson,	Wilmington,	E. E.
Robert Edward Stewart Pope,	Durham,	E. E.
Harry Alexander Powell,	Fairbluff,	Tex.
James Alexander Powell,	Raleigh,	M. E.
Thomas Milton Poyner,	Poplar Branch,	M. E.
William Thomas Price,	New Bern,	C. E.
William Dudley Simpson,	Raleigh,	C. E.
Edgar English Smith,	Greensboro,	C. E.
Henry Lewis Smith,	Dunn,	C. E.
Harris Ingram Stanback,	Mt. Gilead,	E. E.
Charles Edward Stewart,	Claremont, Va.,	E. E.
John Snipes Stroud,	Frosty,	Tex.
Albert Benjamin Suttle, Jr.,	Shelby,	Chem.

Name.	*Post-office.*	*Course.*
William Thaddeus Temple,	Sanford,	M. E.
John Lawrence Von Glahn,	Wilmington,	C. E.
John Piper Watters,	Charlotte,	E. E.
Royall Edward White,	Aulander,	C. E.
William Henry Whitley,	Albemarle,	C. E.
Frank Graham Williams,	Inez,	Agr.
John C. Williams,	Linden,	C. E.
Thomas Dickson Williams,	Matthews,	E. E.
John Kelso Wilson, Jr.,	Baltimore, Md.,	M. E.
Robert Job Wyatt,	Raleigh,	M. E.
Woodfin Bradsher Yarborough,	Locust Hill,	E. E.
John Franklin Zigler,	Winston-Salem,	C. E.

FRESHMAN CLASS.

William Anderson Allen,	Kinston,	C. E.
Frank Fenning Allison,	Concord,	Agr.
John Allen Arey,	Elmwood,	Agr.
Arthur Norman Armstrong,	Creswell,	Tex.
Wesley Marvin Bagby, Jr.,	High Point,	Tex.
John William Barrett, Jr.,	Rocky Mount,	Agr.
Louis DeKeyser Belden,	Wilmington,	M. E.
Eugene Gray Blackburn,	Winston,	M. E.
Henry Nathan Blanchard,	Greensboro,	E. E.
Thomas Johnson Brevard,	Fairview,	C. E.
Nathan Cohn Brooks,	New Bern,	M. E.
Cecil DeWitt Brothers,	Sharpsburg,	M. E.
Thomas Kincaid Bruner, Jr.,	Raleigh,	Tex.
James Washington Carter,	Morganton,	E. E.
Cleveland Scales Chamblee,	Wakefield,	Agr.
Thorne McKinzie Clark,	Raleigh,	M. E.
Walter Miller Cowles,	Charlotte,	M. E.
John Bennett Craven,	Charlotte,	M. E.
Kenneth Craig Denny,	Cromartie,	E. E.
Fred. Atha Duke,	Raleigh,	M. E.
William Hunt Eaton,	Cleveland,	Agr.
Ralph Ringgold Faison,	Goldsboro,	Agr.
Frank Lindsay Foard,	Winston-Salem,	M. E.
Roscoe Loomis Fox,	Waynesboro, Va.,	Tex.
Julian Goldston Frazier,	Greensboro,	E. E.
Lewis Price Gattis,	Raleigh,	C. E.

Name.	*Post-office.*	*Course.*
Charlie Pool Gray,	Buxton,	C. E.
Marshall E. Gray,	Kinston,	C. E.
Andrew Heartsfield Green,	Raleigh,	Agr.
Joe Julius Grier,	Matthews,	E. E.
William Roy Hampton,	Plymouth,	E. E.
John William Harrelson,	Lawndale,	Tex.
George Harrison,	Enfield,	E. E.
Herbert Harris Harrison,	Greensboro,	M. E.
Frank Hawks,	Kinston,	M. E.
Edmund Burke Haywood,	Raleigh,	E. E.
Thomas Frederic Haywood,	Trenton,	C. E.
Leonard Henderson,	Salisbury,	M. E.
Martin Robert Herring,	Winton,	Agr.
Bascombe Britt Higgins,	Leicester,	Agr.
Daniel Harvey Hill, Jr.,	West Raleigh,	E. E.
William W. A. Hornaday,	Burlington,	Agr.
John Stamey Huckabee,	Albemarle,	E. E.
Samuel Ross Ireland,	Faison,	Agr.
Robert Cowan James,	Wilmington,	C. E.
Frederick John Jones,	New Bern,	C. E.
Ralph Long,	Graham,	Tex.
Samuel Macon Mallison,	Washington,	Min. E.
William Roydan Marshall,	New Bern,	M. E.
Ralph Cecil Mason,	Edenton,	Agr.
Arthur Ballard Massey,	Philadelphia, Pa.,	Agr.
Earl Fleet Mayberry,	North Wilkesboro,	E. E.
Charles Clarence Mayo,	Washington,	Agr.
Walker Morehead Millner,	Leaksville,	C. E.
Benjamin Franklin Montague,	Winston-Salem,	C. E.
Clayton Moore,	Williamston,	E. E.
Owen Moore,	Asheville,	E. E.
William Thomas Moore,	Battleboro,	M. E.
Franklin Jackson Morgan,	Washington,	E. E.
Harry Mott,	Mooresville,	Agr.
Heber Gardner Mumford,	Ayden,	Agr.
Bennett Nooe, Jr.,	Pittsboro,	Chem.
Henry Rothrock Nooe,	Pittsboro,	C. E.
James Francis Oliver,	Mt. Olive,	C. E.
Samuel Loftin Oliver,	Mt. Olive,	M. E.
Julius Monroe Parker,	Hunting Creek,	C. E.

Name.	*Post-office.*	*Course.*
JOHN GILBERT PASCHAL,	Goldston,	E. E.
JAMES CARL PATRICK,	Wadesboro,	C. E.
WILLIAM MURDOCH PECK,	Wilmington,	Tex.
ISHAM ROLAND PEIRCE,	Warsaw,	Agr.
PETER PENICK PIERCE,	Reidsville,	E. E.
PAUL MILLER PITTS,	Concord,	M. E.
BEN. POPE, JR.,	Weldon,	E. E.
JOHN MOIR PRICE,	Leaksville,	M. E.
JESSE LINDSAY PRIMROSE,	Raleigh,	C. E.
ROBERT RICHARD REINHARDT,	Stanley Creek,	Agr.
GEORGE BARBER RIDDLE,	Raleigh,	M. E.
ALFRED PRATT RIGGS,	Wanchese,	C. E.
THOMAS WOOD ROBBINS,	Durham,	E. E.
JOSEPH HENRY ROBERTSON,	Burlington,	E. E.
WILLIAM BARRETT ROSE,	Wadesboro,	E. E.
JAMES OLIN SADLER,	Charlotte,	M. E.
JOHN WILLIAM SHELBURN,	Greenville,	E. E.
ROBERT ARNOLD SHOPE,	Farm School,	Tex.
GEORGE GRAY SIMPSON,	Richmond, Va.,	Tex.
WILLIAM NEVILLE SLOAN,	Franklin,	C. E.
GORDON ADRIAN SMITH,	Raleigh,	C. E.
HUGH STUART STEELE,	Yadkin Valley,	Agr.
SAMUEL FATIS STEPHENS,	Norfolk, Va.,	C. E.
HUGH KEMP SULLIVAN,	Lincolnton,	Agr.
HENRY NEWBOLD SUMNER,	Hertford,	E. E.
VICTOR VAN SYKES,	Efland,	M. E.
BENNIE BENTON TATUM,	Greensboro,	C. E.
WADE HAMPTON TEMPLE,	Chapel Hill,	M. E.
JOHN DICK THOMASON,	Hickory,	M. E.
JAMES EDWIN TOOMER,	Wilmington,	Tex.
WILLIS MOORE TROTTER,	Charlotte,	C. E.
EDGAR RAYMOND UNDERWOOD,	Huntersville,	C. E.
GEORGE MILTON WARD,	Washington,	Agr.
THOMAS BODDIE WARD,	Nashville,	Tex.
THOMAS RUFFIN WARREN,	Durham,	Tex.
TOM LYNCH WEAVER,	Thermal City,	Tex.
WILLIAM BELL WEEKS,	Stella,	E. E.
HENRY PUREFOY WHITEHURST,	New Bern,	E. E.
JOSEPH SLAUGHTER WHITEHURST,	Elizabeth City,	C. E.
OLIVER GAINES WHITLEY,	Norwood,	C. E.

Name.	*Post-office.*	*Course.*
Robert Marshall Whitley,	Charlotte,	Agr.
Robert Beverly Whittington,	Asheville,	E. E.
William Carl Williams,	Matthews,	C. E.
David Roy Winstead,	Wilson,	Tex.
Ben. Witherington,	Goldsboro,	M. E.
Paul Adams Witherspoon,	Mooresville,	E. E.

Short Course.

FIRST YEAR.

James Samuel Abernethy,	Charlotte,	Agr.
Alfred Lathen Alexander,	Charlotte,	Agr.
Clinton Cress Allison,	Concord,	Agr.
Reuben Saunders Bagley,	Mildred,	Agr.
Samuel Askew Batchelor,	Nashville,	Agr.
Forrest Beam,	Lattimore,	M. A.
Burwell Baxter Bell,	Shawboro,	M. A.
Joseph E. C. Bell, Jr.,	Shawboro,	Agr.
John Adam Bernhardt,	Salisbury,	M. A.
James Yancey Blackwell,	Quick,	Agr.
William Chaffin Boone,	Lumberton,	Agr.
George Washington Braddy,	Westbrook,	M. A.
John Benjamin Bray,	Sligo,	M. A.
William S. R. Burwell,	Kittrell,	M. A.
DaCosta Moore Clarke,	Old Fort,	App. E.
James A. Covington, Jr.,	Rockingham,	Agr.
Edward Clifton Crews,	Durham,	M. A.
Sidney Charles Cromie,	Victory Mills, N. Y.,	M. A.
Deburnia Maynard Darden,	Falling Creek,	App. E.
Aaron Heide Davis,	Rocky Point,	M. A.
Hilsmon Clellan Davis,	Youngsville,	Agr.
James Emis Davis,	Youngsville,	Agr.
Grover Cleveland Denton,	Enola,	M. A.
Everett Stuart Durham,	Snow Camp,	Agr.
Lewis Clinton Eason,	Gatesville,	M. A.
Henry Roe Field,	Leaksville,	M. A.
Curren Emmett Fields,	Kinston,	M. A.
Julian Emmitt Fletcher,	Durham,	Agr.
Robert Lee Foy,	Scott's Hill,	M. A.
Haywood Gaddy, Jr.,	Ansonville,	Tex.

Name.	*Post-office.*	*Course.*
Fred. Lardner Gibbon,	Charlotte,	Agr.
Francis Marion Gilbert,	Grifton,	M. A.
Frank Griffith,	Monroe,	Agr.
John Kirby Grubb,	Greensboro,	M. A.
Ernest Albert Haynes,	Raleigh,	M. A.
Aclam Duncan Herren,	Waynesville,	M. A.
George Delamater Herring,	Delway,	Agr.
Joseph Oscar Herring,	Newton Grove,	Agr.
Harry Mead Hodges,	LaGrange,	M. A.
William Moore Hollingsworth,	Mt. Airy,	M. A.
Murphy McNeill Holloway,	Cardenas,	M. A.
Jesse Glenn Holt,	Greensboro,	M. A.
Joseph Henry Howard,	Hobgood,	Agr.
Paul L. Howell,	Waynesville,	Agr.
Ralph Cleveland Hunter.	East Laporte,	Agr.
Wilbon Oisa Huntley,	Wadesboro,	Agr.
Leonard Clayton Irvin,	Mt. Airy,	M. A.
John William Ivey,	Seven Springs,	M. A.
Edward Turner Jordan,	Siler City,	App. E.
Walter Merritt Kenly,	Wilmington,	Agr.
George Shirley Kilpatrick,	Kinston,	M. A.
James Frank LaRoque,	Kinston,	App. E.
James Edward Latham,	Washington,	Agr.
Bascom Campbell Livingston,	Tryon,	M. A.
Robert Atwater Lord,	Montreat,	M. A.
Daniel Madison McBrayer,	Rutherfordton,	App. E.
Oscar W. McCauley,	Union Ridge,	M. A.
Gustavus McCaskill,	Laurinburg,	M. A.
Edward Parrish McCoy,	Asheville,	App. E.
Claude Lenoir Mast,	Valle Crucis,	Agr.
Williamson Menefee,	Greensboro,	Tex.
William Macon Michaux,	Worry,	M. A.
George Lewis Miller,	Laurel Springs,	M. A.
Andrew Weaver Moody,	East Laporte,	Agr.
Ivan Charles Moore,	Mt. Airy,	Tex.
William Fland Morris,	Ashboro,	M. A.
William Worth Morrison,	Morven,	Agr.
James Heath Morrow,	Albemarle,	M. A.
John Thomas O'Berry,	Dudley,	Agr.
Julian Baxter Peacock,	Lexington,	App. E.

Name.	*Post-office.*	*Course.*
William Ransome Phillips,	Dunn,	App. E.
William Jesse Pickett,	Kenansville,	Agr.
Paul Edwards Powell,	Fair Bluff,	Agr.
James Bruce Price,	Leaksville,	M. A.
Walter Newton Shine,	Kenansville,	M. A.
Jesse B. Southerland,	Wallace,	Agr.
Alexander Stewart,	Maxton,	Agr.
Dugald Stewart, Jr.,	Laurinburg,	Agr.
Rom Devan Sturdivant,	Garner,	Agr.
Harry Swindell,	Belhaven,	Agr.
Azariah Graves Thompson,	Leasburg,	M. A.
William Putnam Thompson,	Falls,	App. E.
Oscar Alfred Turlington,	Clinton,	M. A.
Thomas Ruffin Whittemore,	Wentworth,	Agr.
J. W. Wilson,	Oxford,	Agr.
Oscar Franklin Wolfe,	Albemarle,	M. A.
Thomas Hunter Worsham,	Locust Hill,	M. A.

Short Course.

SECOND YEAR.

Loyd Lacy Allison,	Concord,	Agr.
Kinchen Clyde Council,	Wananish,	M. A.
Edgar Winfield Iseley,	McLeansville,	Agr.
Zeb. Vance Linker,	Concord,	Tex.
John Harry King Morgan,	Salisbury,	M. A.
Joseph Stark Norman,	Plymouth,	M. A.
Malcolm LeMay Sanders,	Smithfield,	Agr.
Russell Lee Satterthwaite,	Plymouth,	M. A.
Alfred Milton Staley,	Staley,	Tex.
Duncan Stewart,	Maxton,	Agr.
Roland David Thigpen,	Speed,	Agr.
Paul Valaer,	Winston-Salem,	M. A.
Walter Calvin Warren,	Gordonton,	Agr.
Louis Glenn Winstead,	Elm City,	Agr.

IRREGULAR STUDENTS.

Jesse M. Arey,	Elmwood,	Agr.
Aubrey Leland Baker,	Raleigh,	App. E.
William Walters Baker,	Wakefield,	C. E.

Name.	*Post-office.*	*Course.*
Wm. Herbert Doughty Banck,	Wilmington,	C. E.
James Lamar Beall,	Linwood,	Agr.
Joseph Agin Boone, Jr.,	Lumberton,	Agr.
John Hawey Bryan,	Goldsboro,	M. E.
Warren Raymond Clardy,	Anderson, S. C.,	C. E.
Daniel William Cox,	Rowland,	Agr.
Percy Leigh Gainey,	Sherwood,	Agr.
Frank Duncan Gibson,	Gibson,	Agr.
Jeptha Nelson Gibson,	Gibson,	Agr.
William Roy Hampton,	Plymouth,	M. E.
Gordon Harris,	Raleigh,	E. E.
James Hoover Henley,	Sanford,	Agr.
Charles Frederick Hutaff,	Wilmington,	M. E.
Lawrence O'Toole Jones,	Raleigh,	Agr.
Elma N. Lawrence,	Raleigh,	Agr.
William Garland McBrayer,	Shelby,	C. E.
Rodney Rathbone McCathran,	Washington, D. C.,	E. E.
John Byron Martin,	Mooresboro,	Agr.
Lewis Larkins Merritt,	Wilmington,	M. E.
Walter Booker Moorman,	Asheville,	M. E.
James Caleb Parker,	Elizabeth City,	E. E.
Ruble Poole,	Caraway,	C. E.
John Alexander Porter, Jr.,	Biltmore,	M. E.
Harry Roland,	Burnsville,	M. E.
Walter Jefferson Shaw,	Raleigh,	M. E.
Basil Skinner Snowden,	Snowden,	Agr.
Cecil Ernest Spruill,	Creswell,	M. E.
Frank Martin Thompson,	Raleigh,	Tex.
James Fenton Towe,	Chapanoke,	E. E.
Edmund Farriss Ward,	West Raleigh,	Agr.
William Watters,	Wilmington,	C. E.
Willie Smallwood White,	Belhaven,	Agr.
Arthur John Wilson,	Knoxville, Ill.,	Chem.

SPECIAL STUDENTS.

Harry Bessent Charles,	Mocksville,	M. E.
Blaine Clingman Dellinger,	Shelby,	M. E.
J. Frank Harris, Jr.,	Shelby,	M. E.
Job Hansell Koon,	Asheville,	M. E.

Name.	*Post-office.*	*Course.*
Henderson Solberry Lewis,	Tarboro,	Dairying.
Leonard Thaddeus Oden,	Hunter's Bridge,	Dairying.
Hubert Graham Scarboro,	Eagle Rock,	Agr.
Frank V. Scott,	Elizabeth City,	Agr.
Herbert Nathaniel Steed,	Steeds,	Tex.
Dunn Karl Steele,	Keystone, W. Va.,	M. E.
Lawrence Alfred Thompson,	Haw River,	Tex.
Willie James Ward,	Plymouth,	M. E.
John Allison Watson,	Wilson,	M. E.
Roscoe Robinson Weaver,	Nonah,	M. E.
C. L. Williams,	Lexington,	Tex.

WINTER-COURSE STUDENTS.

James Rufus Bennett,	Ellerbe,	Dairying.
W. L. Bland,	Faison,	Dairying.
Spottswood Burwell,	Kittrell,	Dairying.
Aaron R. Chisholm,	Sanford,	Textile.
Robert Lee Croom,	Colly,	Dairying.
Thomas Cone DePriest.	Lattimore,	Dairying.
Edward K. Garrison,	Pineville,	Dairying.
Samuel W. Garner,	Yadkinville,	Dairying.
William Stevens Ingram,	Ellerbe,	Dairying.
Robert Graham Johnston,	Mooresville,	Dairying.
Samuel Luther Laney,	Hope,	Dairying.
Jack Peter McNeill,	Jonesboro,	Textile.
Goldie Ethel Medlin,	Cary,	Dairying.
Wade Hampton Millaway,	McLeansville,	Dairying.
Floyd Ellsworth Osborne,	Horse Shoe,	Dairying.
Needham Pittman,	Pinkney,	Dairying.
James Alva Powell,	Warsaw,	Dairying.
Bulah Powers,	Cary,	Dairying.
John Price,	Pineville,	Dairying.
Gideon Jonathan Saunders,	Belvidere,	Dairying.
Lloyd Smith,	Fort Mill, S. C.,	Dairying.
Samuel Hampton Smith,	West Raleigh,	Textile.
John William Smithson,	Battleboro,	Dairying.
Joe Chauncey Washburn,	Shelby,	Dairying.
DeWitt Talmage Watson,	Cheraw, S. C.,	Dairying.
John Lee White,	Concord,	Dairying.

SIXTEENTH ANNUAL COMMENCEMENT.

May 29, 1905.

Degrees Conferred.

BACHELORS OF AGRICULTURE.

LEROY FRANKLIN ABERNETHY,
ROBERT JAMES AVERY,
JOEL WATKINS BULLOCK,
WILLIAM FRANKLIN KIRKPATRICK,
MALCOLM ROLLAND MCGIRT,
JAMES OSCAR MORGAN,
PLEASANT H. POINDEXTER,
ROBERT WALTER SCOTT, JR.

BACHELORS OF ENGINEERING.

In Civil Engineering.

HENRY BROZIER CARTWRIGHT,
JARVIS BENJAMIN HARDING, B.E.,
JERE ISAAC HERRITAGE,
ARTHUR TEMPLETON KENYON,
STARR NEELY KNOX,
JAMES HERRITAGE KOONCE,
HENRY MARVIN LILLY,
LINDSLEY ALEXANDER MURR,
EDWARD GRIFFITH PORTER, JR.,
GASTON WILDER ROGERS, B.E.,
JONATHAN RHODES SMITH,
JOHN DAVIDSON SPINKS,
ARCHIE CARRAWAY WILKINSON.

In Electrical Engineering.

WILLIAM MILLER CHAMBERS,
LLOYD RAINEY HUNT,
ERVIN BLAKENEY STACK,
SYLVESTER MURRAY VIELE,
WALTER JENNINGS WALKER.

In Mechanical Engineering.

BENJAMIN ALEXANDER BROOM,
WALTER GOSS FINCH,
STERLING GRAYDON,
GEORGE GREEN LYNCH,
JOHN ALSEY PARK,
STEPHEN DOCKERY WALL.

In Textile Industry.

LABAN MILES HOFFMAN, JR.,
WALTER WELLINGTON WATT, JR.

In Mining Engineering.

LIPSCOMB GOODWIN LYKES.

BACHELORS OF SCIENCE.

In Industrial Chemistry.

Oscar Luther Bagley,
Richard Hugh Harper,
Walter Hoge McIntire,
Garland Perry Myatt,
James Hicks Peirce.

Announcement of Honors.

HONORS IN SCHOLARSHIP FOR FOUR YEARS.

J. Rhodes Smith.

HONORS IN SCHOLARSHIP FOR 1904-5.

Senior Class.

O. L. Bagley,
J. B. Harding,
J. I. Herritage,
G. W. Rogers,
J. R. Smith,
S. D. Wall.

Junior Class.

M. H. Chesbro,
A. E. Escott,
C. W. Hewlett,
J. P. Lovill,
R. Maxwell.

Sophomore Class.

S. Eldridge,
C. L. Garner,
L. R. Gilbert,
W. B. Truitt.

Freshman Class.

W. P. Ashcraft,
W. L. Black,
R. R. Eagle,
M. L. Eargle.

Short-course Class.

P. L. Gainey,
L. G. Winstead.

HONORS FOR PUNCTUALITY.

S. N. Knox, '05.
J. H. Koonce, '05.
J. E. Overton, '07.
N. C. Brooks, '08.
W. B. Burgess, '08.
H. W. Kueffner, '08.

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CATALOGUE

AGRICULTURAL AND MECHANICAL COLLEGE RECORD.

VOL. 5. NO. 4.

MARCH, 1907.

WEST RALEIGH, N. C.

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REGISTRAR, A. AND M. COLLEGE,
West Raleigh, N. C.

THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1906-1907

RALEIGH:
E. M. UZZELL & CO., STATE PRINTERS AND BINDERS.
1907.

CALENDAR.

1907.

JANUARY.

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1908.

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COLLEGE CALENDAR.

1907.

Thursday,	July	11,	Entrance examination at each county court-house, 10 A. M.
Wednesday,	September	4,	Entrance examination at the College, 9 A. M.
Thursday,	September	5,	First Term begins; Registration Day.
Wednesday,	September	4,	Examinations to remove conditions. See page 22.
Thursday,	September	5,	
Friday,	September	6,	
Saturday,	September	7,	
Thursday,	November	28,	Thanksgiving Day.
Friday,	December	20,	First Term ends.

1908.

Tuesday,	January	7,	Second Term begins; Registration Day.
Saturday,	February	1,	Examinations to remove conditions. See page 22.
Saturday,	February	8,	
Saturday,	February	15,	
Saturday,	February	22,	
Saturday,	March	14,	Second Term ends.
Monday,	March	16,	Third Term begins; Registration Day.
Sunday,	May	24,	Baccalaureate Sermon.
Monday,	May	25,	Alumni Day.
Tuesday,	May	26,	Annual Oration.
Wednesday,	May	27,	Commencement Day.

BOARD OF TRUSTEES.

Name.	*Post-office.*	*Term Expires.*
R. H. Ricks	Rocky Mount	May 1, 1909.
W. D. Turner	Statesville	May 1, 1909.
O. Max Gardner	Shelby	May 1, 1909.
Locke Craig	Asheville	May 1, 1909.
C. W. Gold	Wilson	May 1, 1911.
E. M. Koonce	Jacksonville	May 1, 1911.
T. W. Blount	Roper	May 1, 1911.
D. A. Tompkins	Charlotte	May 1, 1911.
J. T. Ellington	Smithfield	May 1, 1913.
W. E. Daniel	Weldon	May 1, 1913.
W. H. Ragan	High Point	May 1, 1913.
W. B. Cooper	Wilmington	May 1, 1913.
M. B. Stickley	Concord	May 1, 1915.
T. T. Ballinger	Tryon	May 1, 1915.
N. B. Broughton	Raleigh	May 1, 1915.
O. L. Clark	Clarkton	May 1, 1915.

FACULTY.

GEORGE TAYLOE WINSTON, A.M., LL.D., President and Professor of Political Economy.

DANIEL HARVEY HILL, A.M., Lit.D., Professor of English, and Vice-President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering.

TAIT BUTLER, V.S., Professor of Veterinary Science and Zoology.

FRANK LINCOLN STEVENS, M.Sc., Ph.D., Professor of Botany and Vegetable Pathology.

ELLERY BURTON PAINE, M.S., E.E., Professor of Electrical Engineering and Physics.

CHARLES WALTER THOMAS, M.E., Professor of Mechanical Engineering.

ROBERT E. LEE YATES, A.M., Professor of Mathematics.

THOMAS NELSON, Professor of Textile Industry.

CHARLES M. CONNER, B.S.A., B.S., Professor of Agriculture.

JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.

WILLIAM NICOL HUTT, B.S.A., Professor of Horticulture.

BENJAMIN WESLEY KILGORE, M.S., Lecturer on Soils and Fertilizers.

JOHN CHESTER KENDALL, B.S., Assistant Professor of Dairy Husbandry.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Assistant Professor of Zoology and Physiology.

BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

FRANK REIMER, Assistant Professor of Horticulture.

ROBERT SETH CURTIS, B.S.A., Assistant Professor of Animal Husbandry.

CHARLES BENJAMIN PARK, Superintendent of Shops.

WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Instructor in Chemistry.

FRANKLIN SHERMAN, JR., B.S.A., Instructor in Entomology.

CARROLL LAMB MANN, B.S., C.E., Instructor in Mathematics.

PINCKNEY GUSTAVE DEAL, Instructor in Forge Shop.

THOMAS SIMEON LANG, B.S., C.E., Instructor in Civil Engineering.

GEORGE SUMMEY, JR., Ph.D., Instructor in English.

WINFRED MORSE ADAMS, B.S., Instructor in Electrical Engineering.

JOHN HOUSTON SHUFORD, B.S., Instructor in Dyeing.

ALFRED HENRY THIESSEN, B.S., Instructor in Meteorology.

RUSSELL SAGE WOGLUM, A.B., M.S.A., Instructor in Entomology.

WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.

CHARLES HERBERT LAWRANCE, B.S., Instructor in Machine Design.

JOHN ALSEY PARK, B.E., Instructor in Mathematics.

MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.

ERNEST JENKINS HOFFMAN, Ph.D., Instructor in Chemistry.

LILLIAN LEE VAUGHAN, B.E., Instructor in Drawing.

CARL PHILIP BONN, B.A., Instructor in English.

CLARENCE WILSON HEWLETT, B.S., Instructor in Physics.

HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.

JAMES CLARENCE TEMPLE, B.Agr., Assistant in Bacteriology.

ARTHUR JOHN WILSON, Assistant in Chemistry.

FRANK HAMILTON BROWN, Laboratory Assistant in Botany.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar and Proctor.

ARTHUR FINN BOWEN, Bursar.

BENJAMIN SMITH SKINNER, Farm Superintendent.

JAMES OLIVER LOFTIN, Steward.

MISS ELSIE LANIER STOCKARD, Librarian.

MRS. DAISY LEWIS, Matron.

MISS KATHARINE FORT, Stenographer.

JAMES RUFUS ROGERS, A.B., M.D., Physician.

AGRICULTURAL EXPERIMENT STATION DEPARTMENT.

GEORGE TAYLOE WINSTON, A.M., LL.D., President.
BENJAMIN WESLEY KILGORE, M.S., Director.
WILLIAM ALPHONSO WITHERS, A.M., Chemist.
TAIT BUTLER, V.S., Veterinarian.
FRANK LINCOLN STEVENS, M.S., Ph.D., Vegetable Pathologist.
CHARLES M. CONNER, B.S.A., B.S., Agriculturist.
WILLIAM NICOL HUTT, B.S.A., Horticulturist.
FRANKLIN SHERMAN, JR., B.S.A., Entomologist.
CHARLES BURGESS WILLIAMS, M.S., Agronomist.
JOHN STRAUCHON JEFFREY, Poultryman.
WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Assistant Chemist.
JAMES CLARENCE TEMPLE, B.Agr., Assistant in Bacteriology.
JOHN CHESTER KENDALL, B.S., Assistant in Dairy Husbandry.
WILLIAM KERR, B.Agr., Assistant, Field Experiments.
JOHN GALENTINE HALL, A.M., Assistant in Plant Diseases.
FRANK REIMER, M.S., Assistant Horticulturist.
ARTHUR FINN BOWEN, Bursar.

MILITARY ORGANIZATION.

Commandant of Cadets.

FIRST LIEUTENANT JOHN S. E. YOUNG, U. S. Army.

Cadet Major.

W. B. TRUITT.

Battalion Staff.

L. F. CARLETON, First Lieutenant and Adjutant.
A. C. JONES, First Lieutenant and Quartermaster.

Non-Commissioned Staff.

R. R. EAGLE, Sergeant-Major.
S. M. GIBBS, Color Sergeant.

Band.

W. N. HOLT, Captain.
H. S. BATTIE, First Lieutenant.
T. F. PARKER, First Lieutenant.
W. G. FERGUSON, Drum-Major.
G. F. BASON, First Sergeant and Instructor.
R. R. FAISON, Corporal.

Company A.

P. W. HARDIE, Captain.
J. L. HEMPHILL, First Lieutenant.
C. B. WHITEHURST, Second Lieutenant.
L. J. HERRING, Second Lieutenant.
D. LINDSAY, First Sergeant.
T. M. POYNER, Sergeant.
G. L. LYERLY, Sergeant.
R. J. WYATT, Sergeant.
K. C. COUNCIL, Sergeant.
H. N. BLANCHARD, Corporal.
J. W. HARRELSON, Corporal.
W. M. MILLNER, Corporal.
W. B. ROSE, Corporal.
J. B. CRAVEN, Corporal.
A. P. RIGGS, Corporal.

Company B.

G. R. HARDESTY, Captain.
L. M. WEAVER, First Lieutenant.
J. M. MILLS, Second Lieutenant.
E. F. MEADOR, Second Lieutenant.
A. G. BOYNTON, First Sergeant.
L. H. COUCH, Sergeant.
H. A. POWELL, Sergeant.

R. E. WHITE, Sergeant.
F. H. BROWN, Sergeant.
G. HARRISON, Corporal.
B. F. MONTAGUE, Corporal.
R. A. SHOPE, Corporal.
C. D. BROTHERS, Corporal.
A. H. GREEN, Corporal.

Company C.

G. F. HINSHAW, Captain.
B. B. EVERETT, First Lieutenant.
L. J. SCHWAB, Second Lieutenant.
J. E. OVERTON, Second Lieutenant.
H. I. STANBACK, First Sergeant.
W. L. BLACK, Sergeant.
J. S. STROUD, Sergeant.
M. HENDRICK, Sergeant.
W. B. BURGESS, Sergeant.
T. M. CLARK, Corporal.
J. M. PARKER, Corporal.
H. S. STEELE, Corporal.
C. P. GRAY, Corporal.

Company D.

C. L. GARNER, Captain.
W. G. PITTMAN, First Lieutenant.
R. S. GRAVES, Second Lieutenant.
J. L. VON GLAHN, First Sergeant.
E. E. SMITH, Sergeant.
J. D. GRADY, Sergeant.
M. H. GOLD, Sergeant.
B. T. FERGUSON, Sergeant.
J. G. PASCHAL, Corporal.
S. F. STEPHENS, Corporal.

G. G. SIMPSON, Corporal.
W. A. HORNADAY, Corporal.
K. C. DENNY, Corporal.

Company E.

L. R. GILBERT, Captain.
H. K. McCONNELL, First Lieutenant.
J. L. FERGUSON, Second Lieutenant.
D. Y. HAGAN, First Sergeant.
E. W. GREGORY, Sergeant.
M. L. EARGLE, Sergeant.
T. D. GRIMSHAWE, Sergeant.
C. T. MARSH, Corporal.
S. R. IRELAND, Corporal.
J. M. PRICE, Corporal.
H. N. SUMNER, Corporal.
P. A. WITHERSPOON, Corporal.

NOTE.—On October 17, 1906, the battalion held a competitive drill on the Fair Grounds track, during Fair Week. Company C was selected as the best-drilled organization and awarded the College pennant.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890, and the "Nelson Act" of 1907.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from twelve deep wells. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and twenty-five acres of land and sixteen buildings, and its teaching force consists of forty specialists. Its laboratories, drawing-rooms, and work-shops are well equipped. Its library contains four thousand six hundred volumes, and its reading-room is well supplied with literary and technical journals and newspapers.

BUILDINGS.

The Main Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation-rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall.—In honor of the late R. Stanhope Pullen, the greatest benefactor of the College, the large new building recently finished has been called Pullen Hall. The basement of this building is used as a dining-room and seats five hundred students. The first story is used for library, reading-room, and lecture-rooms. The second story serves as the College auditorium. This room is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is 208 by 74 feet. The lower or basement floor contains the class-rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making, stock judging, farm butchering, and cold-storage accommodations for the products.

The second floor contains the offices of the department, class-rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery.

On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class-rooms and large, well-lighted laboratories.

The building affords the best accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

The Boiler-house is a single-story brick building, containing boilers, fire-pump, and the machinery connected with the steam-heating plant.

The Barn is a frame building of modern design and carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

Heat and Light.—All the College buildings are lighted by electricity from a plant managed by the students, under the direction of the Professor of Electrical Engineering.

The third and fourth dormitories, Primrose Hall and the greenhouses attached are heated by hot water; the Textile Building is heated by the Sturtevant hot-air system, and the other College buildings are heated by the Warren-Webster vacuum system of building-heating.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture

and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the Agricultural Building in Raleigh and the laboratories are in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those that are unable or unwilling to observe regularity, system, and order in their daily work.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the student in the Freshman Class who earns the largest and the next largest amount of money by labor on the College farm.

The Cole Manufacturing Company, of Charlotte, N. C., donated to the Biological Club a Cole Universal Planter No. 7, valued at $17.50, as a prize to be awarded to the student making the best personal observations during the year.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

MILITARY APPOINTMENTS.

Officers and non-commissioned officers, having accepted their commissions and appointments, and having entered upon the duties of their several offices, will not be permitted to give up military duty for other work, but will be required to perform such military duty throughout the entire session.

DISCIPLINE.

The College is under military discipline and the students are regularly organized into a battalion. A printed copy of rules and regulations is furnished each student on admission, and he is expected to conform to the same during his connection with the institution. The discipline is intended to secure studious and economical habits, with punctuality, system, and order in the performance of all duties. A durable uniform is required to be worn on drill; rooms plainly furnished and a mess-hall economically managed by the College prevents extravagance in living; regular study hours, day and night, with proper restrictions as to visiting Raleigh, check, or at least minimize, tendencies to idleness, vice, and rowdyism.

Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great

work; but the College is in no sense a reform school, and its work must not be hindered by the presence of young men who are grossly vicious, idle, or incompetent.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College.

The scale of grading used is as follows:

90 per cent., or more.....grade 1
80 per cent., or more.....grade 2
70 per cent., or more.....grade 3
60 per cent., or more.....grade 4
50 per cent., or more.....grade 5
40 per cent., or more.....grade 6

The passing grade is 4. Conditions are assigned for grades 5 and 6. These must be removed at the regular condition examinations, or special examinations will be granted by the Faculty upon receipt of $1 for each.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization of the students, and is entirely under student management. A general secretary is employed by the association and devotes his entire time to the work. The members of the Faculty are interested in the work and give assistance when requested to do so. Any student who is a member of an evangelical church may become an active member. Any student of good moral character or who desires to improve his moral life may become an associate member.

The Association has secured a large room in Pullen Hall. Two regular meetings are held each week. The mid-week prayer service is conducted by students. The meetings on Sunday are conducted by members of the Faculty and others.

The leading part of Association work is Bible Study. About one hundred and seventy students are enrolled this session in Bible classes led by students. This work is under the supervision of the Bible Study Committee and the general secretary. This is the only course of Bible instruction in the College. Every student, whether a member of the Association or not, should be a member of some group. The following courses are offered:

Freshman Course.—"Studies in the Life of Jesus Christ." By Edward I. Bosworth. Based on the Gospels by Mark and John, with a comparative study of the last week as recorded by the four Gospels.

Sophomore Course.—"Studies in the Acts and Epistles." By Edward I. Bosworth. Based on "The Records and Letters of the Apostolic Age," by Ernest DeWitt Burton, and arranged for daily personal study.

Junior Course.—"Leaders of Israel." By G. L. Robinson. Portraying the character of Israel's leaders, and the history of the people from Abraham to Christ.

Senior Course.—"The Teachings of Jesus and His Apostles." By Edward I. Bosworth.

The following courses will be offered on missions:

1. The New Era in the Philippines. (Brown).
2. Effective Workers in Needy Fields.
3. The Call of the Home Land.
4. China and Her Problems.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Faculty rules governing athletics are as follows:

1. Before any student can become a member or a substitute member of any athletic team in this College and take part in any intercollegiate contest, he must make application to the Committee on Athletics in the College and secure the endorsed approval of that committee to his application. It shall be the duty of the Athletic Committee to have the executive officers of the College endorse such appli-

cation to the effect that the applicant is a regular student of the College, registered within thirty days after the beginning of the fall session.

2. It shall be the duty of the Athletic Committee to inquire into and make a record of the athletic experiences of the applicant, and it shall be the duty of the applicant to appear before the committee and answer on his honor such questions as the committee may see fit to ask.

3. It shall be the duty of the Athletic Committee to require a pledge, in writing, of the applicant, certifying on his honor that he has never accepted, directly or indirectly, remuneration, compensatory gift, valuable consideration or promise thereof, for his athletic services, and that he is, in the proper and strict sense of the word, an amateur player in collegiate athletic sports, before the committee endorses his application.

4. No student of the College who has been a member or a substitute member of a base-ball or a foot-ball team at another college or university shall be permitted to become a member of either base-ball or foot-ball team at this College, unless and until he shall have been a student in residence at this College for at least five months.

5. No person whose name is in the Faculty list or appears in the catalogue list of officers of instruction and administration of the College, and who receives a remuneration therefrom, shall be a member of any athletic team representing the College.

6. Whereas, a member of an athletic team of this College is a representative student and enjoys special honor in thus representing the College, this privilege shall be withheld from any student whose scholastic standing is discreditable.

7. Any student who has participated as a player on a college team, in either base-ball or foot-ball, or both, for a period of four years, shall thereafter be ineligible for such athletic contests of the College.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practise in base-ball, foot-ball, track athletics, etc.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about four thousand

volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about seven thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific, and technical research and training.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *extempore* speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

The Berzelius Chemical Society meets weekly for the discussion of chemical subjects and for review of the current chemical literature with which the College is well supplied.

The Merriman Society of Civil Engineering meets fortnightly for the purpose of reading and discussing papers of interest to civil engineers.

The Pullen, Leazar, and Tenerian Literary Societies afford excellent opportunities for practise in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Glee Club is composed of about twenty young men, embracing the best musical talent of the College. It aims to give one concert each year, and afterwards to sing at various College entertainments and functions during the year.

The Alumni Association meets on Monday of each year preceding Commencement day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (through simple equations), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses will be examined on Arithmetic (through decimal fractions), English Grammar and Composition, and American History.

Applicants for admission to the two-year course in Textile Industry, if they are eighteen years of age, or over, will not be required to take the entrance examinations.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture, if they are eighteen years of age, will be admitted without examination. Those under eighteen will be required to pass the examination for entrance to the Freshman Class.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1907 is July 11th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Wednesday preceding the opening day. The examinations begin with English at 9 A. M., in Room 21, Main Building, followed by Mathematics at 11, and History at 2 in the same room. The date for 1907 is September 4th.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.
2. Applicants for admission to the one-year course in Agriculture, and two-year course in Textile Industry, if they are over eighteen years of age.
3. School teachers holding teachers' certificates.
4. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

CONDITION EXAMINATIONS.

Examinations will be held during September and February for the removal of conditions. Students will be admitted to these examinations without charge.

During 1907-1908 these examinations will be held on the following days beginning at 9 o'clock A. M.:

Wednesday, September 4th, and Saturday, February 1st—Agriculture, Horticulture, Civil Engineering, Architecture, Mechanical Engineering, Electrical Engineering, Mining, Metallurgy, and Textile Industry.

Thursday, September 5th, and Saturday, February 8th—Chemistry, Dyeing, Physics, Geology, Mineralogy, Botany and Vegetable Pathology, Zoology, Entomology, Veterinary Science, History, Political Economy, Military Science.

Friday, September 6th, and Saturday, February 15th—English.

Saturday, September 7th, and Saturday, February 2d—Mathematics.

Special examinations for the removal of conditions may be held at other times only upon petition to the head of the department in which the examination is to be held, said petition to be accompanied by a receipt from the Bursar for one dollar for each special examination. All moneys collected as fees for special examinations will be turned over to the loan fund for needy students.

Conditions not removed within a year can be removed only by taking the subject again in class, except that a student who enters college with conditions in practice work may be allowed to carry half of his conditions in practice work to the second year if he remove half of these conditions during his first year.

In order to be graduated, a student must be clear of all conditions before beginning the March examinations of the Senior Year.

A student who fails in three studies for any term will be dropped to a lower class or from the College rolls.

The Registrar will include in the report of each student for each term a list of conditions against the student and a notice of the time at which condition examinations will be held.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Wednesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00.

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

The largest payment is made in September. A student on entering college should bring about $80.00 to meet his various payments for the first months, or $57.50, if he has a scholarship.

Students withdrawing from college within two weeks from date of entrance will be refunded all moneys paid by them to the College

Bursar, except charges for board during the time here. Students withdrawing later than two weeks from date of entrance will be refunded no moneys except for board.

Board is $10.00 per month and is payable on the first day of each month from September to May inclusive; board for less time than one month is charged for at the rate of fifty cents a day or $3.00 per week.

The College Bursar is forbidden by the Trustees to give credit, and there is no deviation from this rule.

A more detailed statement of college fees is as follows:

Tuition	$ 45.00
Room rent, fuel and lights	27.50
Library, lecture, and physical culture	4.00
Incidental	5.00
Medical attention and medicine	6.00
Registration	2.00
Board	90.00
Shop and Drawing (material and use of tools) or Botany	2.00
Uniform and cap	14.30
Books and drawing instruments (estimate)	15.00
Laundry (estimated cost)	10.00

Drawing instruments are not required in the Freshman Class nor in the first-year Mechanic Arts course until the beginning of the second term. These instruments are furnished by the College at cost to all students requiring them. New students are advised not to purchase instruments before consulting the drawing instructors.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillow-cases, one pillow and two bed-spreads for single bed.

In addition to the fees enumerated above, students are required to pay fees as follows: A fee of $1 from students taking work in biological (except bacteriological), physical, or electrical laboratory, for material furnished. The deposits for the Chemistry Department are as follows: Inorganic laboratory, $3; analytical laboratory, $6; organic laboratory, $4; determinative mineralogy and assaying, $3. A deposit of $3 from Juniors and $4 from Seniors taking dyeing or bacteriology, to cover cost of breakages. A deposit of $5 from textile students, to cover cost of designing, supplies, tools, etc. Any unused portion

of deposits to chemical, bacteriological or dyeing laboratories or to the Textile Department will be returned at the end of the year. If the deposit made is not sufficient to cover breakages and cost of material furnished, the students are required to make good the deficiency.

UNIFORM.

The College uniform must be worn by all students except winter-course students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home or purchased in the city. In order to secure uniformity, dark colors (black or dark gray) are required.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability of pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time

is given for repayment to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, Alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $1,562.68.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, pillows, bed-spreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections, at frequent intervals, are made by the College physician. There is an abundant supply of pure water from twelve deep wells. Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College Physician visits the Infirmary daily at 10 o'clock, and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

COURSES OF INSTRUCTION.

The College offers the following Courses of Instruction:

I. **Four-year Courses:**

1st. **Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, and Industrial Chemistry).

3d. **Textile Industry** or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Agriculture is conferred upon a graduate in the Four-year Course in Agriculture. The degree of Bachelor of Science is conferred upon a graduate of the Four-year Course in Chemistry or Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other Four-year Courses.

II. **Short Course** of one year in Agriculture, and of two years in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machine-shop Work, Drawing, and Dynamos and Engine Tending, and in Applied Electricity).

The Short Courses include nearly all the practical work of the Four-year Courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. **Winter Courses** in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and extending to the close of the term ending in March.

IV. **Normal Courses** for the training of teachers along industrial lines.

V. **Graduate Courses,** extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

AGRICULTURAL COURSES.

I. The Four-year Course in Agriculture.
Ia. The One-year Course in Agriculture.
Ib. The Winter Course in Agriculture and Dairying.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

The four-year course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give and to prepare for the technical work of the course. Because of this and because the subject-matter and the methods of the technical portion lie so fully within the domains of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The one-year course in Agriculture is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pays on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young

men who have any talent along this line can fit themselves for this work by taking this course.

The ten-weeks winter course in Agriculture is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention.

The ten-weeks dairy course is a course in practical butter-making in accordance with the most approved methods of the modern creamery.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices upon yield and upon fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

Self-support while a Student.—The Board of Agriculture, in the interest of young men who are unable to meet necessary college expenses, has appropriated $2,500 annually for student labor. This generosity on the part of the Board enables every student to pay a good part of his college expenses; some are able to meet the entire expense this way. This sum appropriated is intended solely to pay for farm work. The work is precisely the sort of work that is done on the farm—plowing, hauling, tile-laying, feeding beef cattle, feeding dairy cattle, feeding and grooming horses, running ditches and terraces, repairing machinery and tools, harvesting crops, the care of hogs, poultry, etc.

This feature in the course of Agriculture is helpful not only in defraying college expenses, but serves as a training and education as well.

Requisites for Admission.—Applicants for admission to the four-year course in Agriculture must be at least sixteen years of age. They are examined in the following subjects: Arithmetic (complete),

Algebra (through simple equations), English Grammar, and American History.

For the one-year course in Agriculture no entrance examinations are required if the applicant is at least eighteen years old. Applicants not eighteen years old desiring to enter the one-year course will be required to stand the examination for entrance to the Freshman Class.

For the winter courses in Agriculture and Dairying no entrance examination is required, but applicants must be over eighteen years of age.

I. Four-year Course in Agriculture, leading to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Botany, Elementary, 35†	3	3	3
Zoology, 46	4	--	--
Physiology, 47	--	4	4
Fruit Culture, 26	5	--	--
Vegetable Gardening, 27	--	5	--
Dairying, 17	--	--	5
Algebra, 84	5	2	--
Geometry, 85	--	3	5
English, 8	3	3	3
Military Drill, 99	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practise periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Breeds of Live-stock, 8	2	--	--
Stock-judging, 9	2	--	--
Animal-breeding, 10	--	3	--
Herd Books, 11	--	1	--
Stock-feeding, 13	--	--	4
Plant Diseases, 34	3	--	--
Economic Entomology, 51	--	3	--
Systematic Botany, 32	--	--	3
Inorganic Chemistry, 61	3	3	3
Inorganic Chemistry (laboratory), 62	2	2	2
Physics, 71	2	2	2
Free-hand Drawing, 76	2	--	--
Farm Crops, 3	--	2	2
English, 89 and 91	3	3	3
Poultry Husbandry, 22	--	--	3
Military Drill, 99	3	2	2

Junior Year.

Farm Equipment, 1	4	--	--
Soils, 2	--	4	4
Veterinary Anatomy, 41	4	--	--
Veterinary Medicine, 42	--	4	--
Veterinary Practice, 43	--	--	4
Agricultural Chemistry, 66	2	2	2
Bacteriology, 36	2	2	2
Wood-work, 78	2	2	--
Forge-work, 79	1	1	--
Landscape Gardening, 28	--	--	3
English and History, 93 and 92	2	2	2
Political Economy, 97	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	2	2

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Geology, 58	2	2	2
English, 92 and 90	2	2	2
Business Law, 95	1	1	1
Elect thirteen periods of the following:			
Live-stock Management (horses), 14	2	--	--
Live-stock Management (beef and dairy cattle), 12	--	2	--
Live-stock Management (sheep and swine), 15	--	--	2
Farm Management	--	2	2
Special Crops, 4	5	3	--
Soil Physics, 5	--	--	3
Dairy Bacteriology, 18	3	--	--
Cheese-making, 19	--	3	--
Experimental Dairying, 20	--	--	3
Poultry Husbandry, 23	--	--	3
Veterinary Medicine, 44	3	3	3
Harvesting and Marketing Fruits, 29	3	--	--
Forestry, 30	3	--	--
Floriculture, 31	--	3	--
Plant-breeding, 32	--	3	--
Horticultural Research, 33	--	--	6
Plant Diseases (advanced), 35	2	--	--
Bacteriology (advanced), 37	2	2	2
Systematic Entomology, 52	--	2	2
Economic Botany, 33	--	--	2
Industrial Chemistry, 68	2	2	2
Organic Chemistry, 63	2	2	2
Analytical Chemistry (laboratory), 64 and 65	9	9	9
Meteorology	--	2	--
Military Drill, 99	3	2	2

One-year Course in Agriculture.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture (Elementary), 6	5	5	5
Horticulture, 34	3	3	3
Animal Husbandry, 16	3	3	3
Dairying, 21	5	--	--
Diseases of Live-stock, 47	--	5	--
Botany, 35	3	--	--
Poultry, 22	--	3	3
Entomology, 51	--	--	3
Diseases of Plants, 38	--	--	2

WINTER COURSE IN AGRICULTURE.

BEGINS JANUARY 6, 1908.

This course is designed to meet the needs of those who desire a knowledge of the practical side of farming, dairying, and poultry-raising, but who have not time to take the regular course in College. Our experience in the Institute work of this State leads us to believe that the farmers are demanding more definite knowledge of their business. Since this can be acquired more easily and at less expense at an Agricultural College than by long experience on a farm, this course is offered.

Young men who have a desire to become farm managers can partially fit themselves for such work by taking this course. The College is called upon frequently to supply farm managers, which it is unable to do because the supply is not equal to the demand. There is a chance for any bright young man who has not money enough to equip a farm of his own to better his condition by fitting himself to accept a position as farm manager.

Instruction in this course is given in such a manner that the students learn by actual contact and original investigation. Practical exercises in identifying varieties of farm crops, fruits, judging farm animals, butter-making, propagation of plants, and making and applying spraying mixtures are the means employed in illustrating and fixing in the minds of the students the instruction given in the classroom.

EQUIPMENT.

All laboratories and equipment used in the regular course are available for instruction in this course.

EXPENSES.

No tuition will be charged, but there will be a laboratory fee of $5 to cover incidental expenses, cost of material, and breakage. There will also be a small medical fee of $1.25. Board may be had in the mess-hall at $2.50 per week. Students who expect to room in dormitories should come provided with covers, sheets, pillow-cases, and towels.

Students will be required to wear white suits in the dairy laboratory. These suits can be had at $1 each.

Books, paper, etc., need not cost over two or three dollars.

The total expense of the course need not exceed $35 over and above railroad fare.

ADMISSION.

No examination is required for entrance to the eight-weeks course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. Since the greater part of the instruction is given in the form of lectures and laboratory work, the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects. Meetings of the students will be held from time to time for their mutual improvement.

OUTLINE OF WINTER COURSE.

GENERAL AGRICULTURE. *24 periods.*

Professor Conner.

Farm Crops.—Condition of generation and growth of plants; seed selection; preparation and cultivation; studies of varieties of corn, cotton, and other crops; judging corn and cotton.

Soils.—Study of origin, formation, and distribution of soils, their physical properties as related to tillage and fertility; laboratory practice with different types of soils.

Farm Equipment.—Construction of farm buildings; the silo and its use; farm machinery; principles of draft, etc.

Fertilizers.—Kinds for different crops; home-mixing; time and method of application; value of stable manure and leguminous crops.

The department is well equipped with various makes of farm machinery for laboratory work. A large room in the Agricultural Building is used for this purpose.

AGRICULTURAL BOTANY. *24 periods.*

Professor Conner.

This course consists of lectures and laboratory work. Such subjects as the following will be considered: Cross-breeding of plants; The flower and its structure; Pollen and its use; Improvement of plants by seed selection; The diseases of plants, how to recognize them and how to prevent them; Bacteria in the home and on the farm, their rôle as disease producers in man, domestic animals and plants, their

function in the dairy, in the making of butter and cheese, in the soil in rendering plant-food available, and in leguminous roots as nitrogen-gatherers.

HORTICULTURE. *24 periods.*

Assistant Professor Reimer.

This course in Horticulture consists of both lectures and laboratory work. It is made especially applicable to North Carolina conditions. The work includes the following subjects:

Fruit Culture.—This course includes a discussion of the fruit sections of this State, and a discussion of the possibilities of fruit-growing in each section. This is followed by lectures on the culture of the leading fruits. This deals with the kind of soil; preparation of soils for fruits; varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit-garden.

Vegetable Gardening.—The possibilities of vegetable-growing in this State are discussed. This is followed by a discussion of the great trucking industry in this State, and the best methods of growing the various vegetables.

A few lectures are also given in the improvement of home grounds.

Laboratory Work.—This includes practices in seed testing; all the different methods of plant propagation, as grafting, budding, cuttings, and also pruning of fruit and ornamental plants; fruit-bud studies; and a systematic study of different varieties of fruits.

DAIRY FARMING. *24 periods.*

Assistant Professor Curtis.

Lectures are given on this subject relating to the origin, history, and characteristics of the different breeds of dairy cattle. The feeding, care, and management are also taken up in this course, with a consideration of the available feeds, their relation to the animal and the proportion of feed-stuffs best adapted to milk production.

The practical part of the work will be given in the judging room, where the student is required to score the animal, after which a comparative study will be taken up relative to the merits of each animal in the class.

FEEDS AND FEEDING AND STOCK-RAISING. *24 periods.*

Assistant Professor Curtis.

Lectures on this study will consist of an elementary study of the digestive systems of the various classes of farm animals indicative of

the kinds of foods adapted to their particular digestive apparatus. This will be followed by the food constituents, the kind, amount, and proportions best adapted to the various classes of live-stock. The student will be required to make tables of digestibility, calculate nutritive ratios, and arrange feeding rations for the several classes of stock relative to the work which they are to perform.

An outline will also be given on the origin, history, characteristics, feed, care, and management of the most prominent breeds of live-stock.

FARM DAIRYING. *Lectures, 12 periods.*
Assistant Professor Kendall. *Laboratory, 24 periods.*

Lectures are given on the nature, composition, and secretion of milk, its uses and value as a food, the production and care of sanitary milk, details in the production of high-grade cream and butter, the marketing of dairy products, and their value when sold as milk, cream, butter, and cheese.

The dairy laboratory course given in connection with the farm dairy lecture course consists of twenty-four periods of two hours each and comprises every detail of dairy work, butter-making, cheese-making, retailing milk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products, and standardizing milk and cream.

COMMERCIAL DAIRYING. *Lectures, 12 periods.*
Assistant Professor Kendall. *Laboratory, 24 periods.*

Three hours a week during last half of course will be devoted to lectures and text-book work on creamery butter-making, manufacturing cheese, and operating milk depots. Lectures are given on the construction, cost, equipment, and operation of farm dairies, creameries, cheese factories, and milk depots. Students are required to draw plans, equip, and make estimates of the entire cost of such plants.

In laboratory practice, which is a part of this course, the students become familiar with the power dairy machinery. The laboratories are equipped with power dairy machinery of sufficient capacity to handle two thousand pounds of milk per hour with the least labor and in the most improved manner.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines, and a twenty-four bottle power tester is used in this work, together with all equipment necessary for testing milk, cream, butter,

cheese, skim-milk, buttermilk, whey, and composite samples, and also the use of the lactometer.

The cheese laboratory is 21 by 30 feet and is fitted out with a 200-gallon cheese vat, a family cheese-making outfit, curd milk, gang press, and a large curing and cold-storage room.

DISEASES OF LIVE-STOCK. *24 periods.*

Dr. Butler.

The lectures on this subject will deal principally with the care and management of farm live-stock with a view to the prevention of diseases; but the nature, causes, and treatment of some of the more common diseases and injuries will also be given attention.

ENTOMOLOGY. *24 periods.*

Mr. Sherman.

This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course.

FARM CHEMISTRY. *24 periods.*

Mr. Sherman.

Lectures on air, water, and chemistry of plants and animal-feeding will be given.

POULTRY-RAISING. *24 periods.*

Mr. Jeffrey.

In this subject is included a study of farm poultry; their breeding and feeding; use of incubators; raising of eggs, broilers and roasters; and fowls for farm use. The department is equipped with incubators, brooders, and several breeds of fowls. This course will be made as practical as it is possible to make it.

AGRICULTURE.

Equipment.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and twenty-five acres, with two hundred and fifty acres under cultivation; a large three-story basement barn, 50 by 72 feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-

bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The live-stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The poultry-yards contain the following breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas, and Pekin Ducks.

Subjects of Instruction.

Economic Entomology.—This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Mr. Woglum.

Diseases of Live-stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent diseases and the treatment of some of the most common diseases. Professor Butler.

AGRONOMY.

Subjects of Instruction.

1. Farm Equipment.—Lectures and recitations upon selecting, planning, and equipping farms; planning and erecting farm buildings, farm vehicles and machinery; power, water, and drainage; practical exercises in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Four periods, first term. For Juniors. Professor Conner.

2. Soils.—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, fertilizers,

and mechanical analysis. Four periods, second and third terms. For Juniors. Professor CONNER.

3. Farm Crops.—Lectures and recitations upon the history, production, harvesting and marketing of farm crops. Practical exercises with growing and dried specimens of farm crops. Two periods, second and third terms. Sophomores. Professor CONNER.

4. Special Crops.—This course is designed for advanced work in farm crops. Corn and cotton are taken up in detail and studied in all their relation to farm economy. Other crops of importance are taken up as time permits. Five periods, first term; three periods, second term. For Seniors. Professor CONNER.

5. Soil Physics.—This course is for more advanced work in soils, and consists of laboratory practice and lectures on origin, formation, and classification of soils; soil moisture and methods of conserving it; soil temperature; soil texture; mechanical analysis of soils, etc. The soils of the State will be studied. Free use of soil maps will be made. Three periods, third term. For Seniors. Professor CONNER.

The course in Elementary Agriculture will consist of lecture and recitation from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, taking up the analysis and classifications of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student.

ANIMAL HUSBANDRY.

8. Breeds of Live-stock.—The origin, history, and characteristics of the several breeds of live-stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Two periods, first term. Required of Sophomores. Assistant Professor CURTIS.

9. Stock Judging.—Practical exercises are given in live-stock judging. The student is required after familiarizing himself with the points of the score-card to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, first term. Required of Sophomores. Assistant Professor CURTIS.

10. Animal Breeding.—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles or laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Sophomores. Assistant Professor CURTIS.

11. Herd Books.—In the study of herd books the student is taught the essential things which constitute a good pedigree. The breeding of pure-bred live-stock has advanced to such a degree that a record of the ancestry must be kept to preserve the purity and trace the performance of the breed. The foundation of the work will be based on the laws which govern breeding, together with the records issued by the various live-stock associations. The student is required to trace the ancestry of animals in their respective herd books. One period, second term. Required of Sophomores. Assistant Professor CURTIS.

12. Live-stock Management, Beef and Dairy Cattle.—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. Two periods, second term. Required of Seniors. Assistant Professor CURTIS.

13. Stock Feeding.—The course in stock feeding includes a study of the anatomy and physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respective uses. The feeding of the various classes of animals will be studied, and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations from Smith's *Practical Stock Feeding*. Four periods, third term. Required of Sophomores. Assistant Professor CURTIS.

14. Live-stock Management, Horses.—Lectures and recitations on the proper care and management of the horse will be given. The important phases of the subject considered will be adaptation, feeding, training, regulation of work, exercise, and grooming. Two periods, first term. Required of Seniors. Assistant Professor CURTIS.

15. Live-stock Management, Sheep and Swine.—This course includes lectures and recitations on the feed, care and management of sheep and swine in relation to the respective uses for which they are grown, whether for breeding or market purposes. Three periods, third term. Required of Seniors. Assistant Professor CURTIS.

16. Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding, herd books, and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods. Required of one-year students. Assistant Professor CURTIS.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is 36 by 57 feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of DeLaval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, buttermilk, whey, and also the use of the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

17. Dairying.—Text-book and lecture course covering the fundamental principles of modern dairying. Two periods, third term. For Freshmen.

Laboratory course consists of practise in the use of modern dairy equipment. Each student is required to become familiar with the

construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Three periods, third term. For Freshmen. Assistant Professor KENDALL.

18. Dairy Bacteriology.—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Two periods, first term. For Seniors.

Laboratory course consists in demonstrating and supplementing the lecture course. Practise is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. One period. For Seniors. Assistant Professor KENDALL.

19. Cheese-making.—This is a lecture and laboratory course on the manufacture of the leading brands of cheese. Three periods, second term. For Seniors. Assistant Professor KENDALL.

20. Experimental Dairying.—Lecture and laboratory practice in making butter and cheese of special commercial importance, and a critical study of dairy literature. Three periods, third term. For Seniors. Assistant Professor KENDALL.

21. Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Assistant Professor KENDALL.

22. Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, third term. For Sophomores and one-year students. Mr. JEFFREY.

23. Poultry Husbandry.—Theory and practice of judging fowls by comparison and score-card; special poultry keeping for special markets; comparison of different systems of poultry keeping; a discussion of articles by best writers in poultry press. Three periods, third term election. Mr. JEFFREY.

Poultry Equipment.—The poultry plant has nineteen breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators and a brooder-house being heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; White and Brown Leghorn; Buff Dopington, Light Brahma, Black Minorca, and Pekin Ducks.

HORTICULTURE.

The Horticultural Department occupies rooms in the Agricultural Building, including class-rooms, laboratory, vegetable and fruit cold-storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

26. **Fruit Culture.**—A course treating of the location and soil for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing for North Carolina fruits. Five periods, first term. Required of Freshmen. Assistant Professor REIMER.

27. **Vegetable Gardening.**—This course deals with the selection and preparation of soil for vegetables, construction of hot-beds and cold frames, fertilizing, handling of seeds, irrigation, transplanting, storing, and culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen.

28. **Landscape Gardening.**—This course deals with the planning, arrangement and care of home grounds, parks and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees and shrubs, flowers and flower-beds, and the grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Assistant Professor REIMER.

29. **Harvesting and Marketing Fruits.**—This course deals with picking, grading, packing, and transportation of products. Also selling, fruit unions, and markets. Text-book and lectures. Three periods, first term. Elective for Seniors. Assistant Professor REIMER.

30. **Forestry.**—This course consists of a thorough study of the fundamentals of forestry. It deals especially with the need, influence, formation, care, and improvement of forests. Also the cutting, use and handling of forest products. A study is made of the forest trees of greatest importance in America. Three periods, first term. Elective for Seniors. Assistant Professor REIMER.

31. **Floriculture.**—In this course the important subject of forcing flowers and vegetables is taken up. It deals with the construction, heating, and ventilation of forcing-houses. Also the culture of the leading flowers and vegetables in such houses. Lectures and text-book. Three periods, second term. Elective for Seniors. Assistant Professor REIMER.

32. **Plant Breeding.**—This course gives a brief review of what has been accomplished in plant breeding and a discussion of the most important problems at the present time. It deals with the principles of plant breeding as laws of breeding, crossing, selection and origination and improvement of varieties. The subject is treated from the horticulturist's viewpoint, dealing with fruits, vegetables, and flowers. Lectures, text-book and laboratory work. Three periods, second term. Elective for Seniors. Assistant Professor REIMER.

33. **Horticultural Research.**—The last term of the Senior year the student makes a thorough study of modern experimental horticulture. The leading horticultural investigations of the past and present are studied. A study is also made of all important literature of some horticultural subject. The latter will be chosen with reference

to the student's future work. Six periods, third term. Elective for Seniors. Assistant Professor REIMER.

34. **Horticulture.**—The course in Horticulture will be just as practical as it is possible to make it. The fall term will be devoted to fruit culture. Instruction will be given in budding, grafting, planting, varieties, preparation of soil, best methods of cultivation, cover crops, fertilizers, manures, pruning, and methods of harvesting and marketing. The instruction will apply especially to North Carolina.

During the winter term the subject of vegetable gardening will be taken up. This includes a discussion of the great trucking industry in North Carolina, possibilities in trucking in the State; soil for vegetables and how best to prepare different soils for vegetables; fertilizers and manures for vegetables; the home fruit and vegetable garden, how to get early and late crops; planting and transplanting; hot-beds and cold frames; best methods of cultivating these crops; varieties, harvesting, and marketing.

The work during the spring term will be a continuation of the work given during the winter term. A few lectures will also be given on the improvement of home grounds and on forestry. Third period. Required of one-year students. Assistant Professor REIMER.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture-room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, an incubator-room, and a cold-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fire-proof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The

greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

Subjects of Instruction.

35. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field-work and simple independent investigations. Three periods. Required of Freshmen and one-year students. Professor STEVENS.

36. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor STEVENS.

37. Economic Botany.—A study of the more important groups of economic plants, weeds, and medicinal plants; seed-testing, nitrification, denitrification, and nitrogen fixation; origin of cultivated plants; bacteria and fungi in their relation to Agriculture. Two periods, third term. Elective for Seniors. Professor STEVENS.

38. Plant Diseases.—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores and one-year students. Professor STEVENS.

39. Plant Disease (Advanced).—Methods of culture and investigation of plant disease. This course is intended to prepare the student for original investigation in plant diseases. Two periods, first term. Elective for Seniors. Professor STEVENS.

40. General Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology.

Two periods. Required of Juniors. Professor STEVENS and Mr. TEMPLE.

41. **Bacteriology (Advanced).**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Two periods. For Seniors. Professor STEVENS.

VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live-stock. In addition to the work required of all students in the Agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the Agricultural courses.

43. **Veterinary Anatomy.**—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors. Doctor ROBERTS.

44. **Veterinary Medicine.**—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors. Professor BUTLER and Doctor ROBERTS.

45. **Veterinary Practice.**—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Four periods, third term. Required of Juniors. Professor BUTLER and Doctor ROBERTS.

46. **Veterinary Medicine.**—Advanced course in veterinary medicine and surgery. Three periods. For Seniors. Professor BUTLER.

ZOOLOGY.

(Diseases of Live-stock).

48. Elementary Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and reading. One term is devoted to vertebrates and invertebrates, exclusive of insects, but including some of the common parasites infesting man and the domestic animals. This course is intended to present a general view of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Four periods, first term. Required of Freshmen. Doctor ROBERTS.

49. Animal Physiology.—A comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory experiments to illustrate principles of physiology. Four periods, second and third terms. Required of Freshmen. Doctor ROBERTS.

ENTOMOLOGY.

51. Elementary Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade, and ornamental plants; *f*, of barn, mill, and household. Lectures and demonstrations. Three periods, second term. Required of Sophomores. Mr. SHERMAN and Mr. WOGLUM.

52. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life-history and habits. Lecture and laboratory practice. Two periods, second and third terms. For Seniors and Juniors. Mr. SHERMAN and Mr. WOGLUM.

GEOLOGY.

58. Geology.—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main fea-

tures of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors.

CHEMISTRY.*

61. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor HOFFMAN.

62. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

63. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Elective for Seniors. Professor WITHERS.

64. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Eight periods, first term. Elective for Seniors. Doctor HOFFMAN.

65. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Eight periods, second and third terms. Elective for Seniors who have taken Course 64. Doctor HOFFMAN.

66. Agricultural Chemistry.—Ingle's *Agricultural Chemistry.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the

* For further information, see course in Chemistry.

chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

68. **Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries, particularly those whose raw materials are supplied by agriculture or whose products are utilized in agriculture. Two periods. Elective for Seniors. Professor WITHERS.

PHYSICS.*

71. **Elementary Physics.**—Properties of matter; fundamental units. British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. HEWLETT.

DRAWING.†

76. **Free-hand Drawing.**—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Sophomores. Mr. VAUGHAN.

77. **Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, second and third terms. Required of Sophomores. Mr. VAUGHAN.

SHOP-WORK.†

78. **Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practise in making simple exercises in wood; elementary exercises in wood-turning. Two periods, first and second terms. Required of Juniors. Required of second-year students. Mr. CLAY.

79. **Forge-work.**—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. One period, first and second terms. For Juniors. One period, third term. Mr. DEAL.

MATHEMATICS.

81. **Algebra.**—Wells' *Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial frac-

* For full information in regard to the Department of Physics, see course in Electrical Engineering.

† For full information in regard to shop-work, drawing, and other Mechanical Engineering subjects, see course in Mechanical Engineering.

tions. Five periods, first term; two periods, second term. Required of Freshmen. Mr. RICHARDSON and Mr. J. A. PARK.

82. Geometry.—Wentworth's *Plane and Solid Geometry. Plane Geometry.* Three periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

87. English Composition.—A drill on the forms of the language, the correct relation of words, the sentence, and the paragraph. Daily written exercises. Three periods. Required of first-year students. Doctor SUMMEY and Mr. BONN.

88. Introductory Composition and Rhetoric.—This course in the fundamentals of rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. BONN.

89. Rhetoric, Criticism, Essays.—The student is taught the essentials of a good style by constant practise. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. BONN.

90. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

91. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

92. English Literature.—The development of English literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, second and third terms. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

HISTORY.

93. English History.—The text is supplemented by lectures on important periods. Two periods, first term. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

95. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book, Parsons' *Laws of Business*. One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. President WINSTON.

98. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

99. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first term. Two periods, second and third terms. Required of all classes except Seniors. Seniors are to either take drill or two extra hours in some other subject instead. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

ENGINEERING COURSES.

Four-year Courses in

II. Civil Engineering.
III. Mechanical Engineering.
IV. Electrical Engineering.
V. Mining Engineering.
VI. Industrial Chemistry.

Two-year Courses in

IIIa. Mechanic Arts.
IVa. Applied Electricity.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and drafting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in drafting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135 †	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	--
Geometry, 264	--	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Architecture, 115	2	--	--
Architectural Drawing, 116	2	2	2
Geometry, 265	5	--	--
Advanced Algebra	--	3	--
Trigonometry, 267	--	2	5
Descriptive Geometry, 105	--	2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

* The lecture and recitation periods are one hour; the laboratory, shop, and other practise periods, two hours.

† The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 102 and 103	2	2	2
Surveying (field-work), 104	2	2	2
Construction, 111	2	--	--
Drawing, 105	2	2	2
Graphic Statics, 101	--	2	2
Mechanics, 128	3	3	3
Analytical Geometry, 268	4	4	--
Calculus, 269	--	--	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Mechanics of Materials, 112	3	--	--
Construction, 111	--	2	2
Road-building, 113	2	--	--
Roofs and Bridges, 109	3	--	--
Bridge Design, 106	--	4	4
Municipal Engineering, 107	--	2	2
Surveying (field-work), 108	2	--	--
Hydraulics, 110	--	3	3
Calculus, 269	3	--	--
Geology, 211	2	2	2
Astronomy, 114	--	2	2
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field-work.

Subjects of Instruction.

101. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Professor RIDDICK.

102. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil and in Mining Engineering and of Seniors in Mechanical Engineering. Mr. LANG.

103. Railroad Engineering.—Reconnaissance, preliminary and location surveys, cross-sections, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Mr. LANG.

104. Surveying.—Field-work. Use of instruments, compass, level, transit and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes and platting. Two periods. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering.

105. Drawing.—Descriptive Geometry, Stereotomy. Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil Engineering. Mr. LANG.

106. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

107. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

108. Surveying.—Field-work. Triangulation and topography, surveys for sewers, water-works, etc. Two periods, first term. Required of Seniors in Civil Engineering. Mr. MANN.

109. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and*

Bridges. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

110. **Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics.* Three periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

111. **Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction.* Lectures. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Civil and Mining Engineering. Professor RIDDICK.

112. **Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

113. **Road-building.**—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

114. **Astronomy.**—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

ARCHITECTURE.

115. **Architecture.**—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

116. **Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN.

128. **Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil and Mining Engineering. Mr. LANG and Mr. MANN.

COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular Four-year Course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering work, and also to furnish him with a basis to carry on more advanced engineering studies. It treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers, and engines.

The Two-year Course is offered to students who wish to become machinists, draughtsmen, stationary engineers, or dynamo tenders.

The courses follow closely the methods adopted by the large manufacturing companies, both in drawing-room system and shop methods.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	--
Geometry, 264	--	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 139	2	2	2
Forge-work, 148	2	--	--
Pattern-making, 149	--	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Boilers, 157	2	--	--
Steam Engines, 158	--	2	--
Valve Gears, 159	--	--	2
Applied Mechanics, 169	3	3	3
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Dynamo Machinery, 183	2	2	2
Analytical Geometry, 268	4	4	--
Calculus, 269	--	--	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Machine Design, 141	2	3	3
Machine-shop Work, 151	3	3	3
Power Plants, 161	--	--	4
Gas Engines, 162	5	--	--
Refrigeration, 163	--	3	--
Heating and Ventilation, 166	--	1	1
Pumping Machinery, 165	--	1	--
Structural Engineering, 167	--	2	2
Mechanics of Materials, 112	3	--	--
Steam Engineering Laboratory, 168	2	2	2
Calculus, 269	3	--	--
Hydraulics, 110	--	3	3
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2

IIIa. The Two-year Course in Mechanic Arts.

First Year.

Free-hand Drawing, 135	4	--	--
Mechanical Drawing, 136	--	4	--
Descriptive Geometry, 137	--	--	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 261	5	--	--
Algebra, 262	--	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 171	2	2	2
Machine-shop Work, 150	3	3	3
Drawing, 171, or Machine-shop Work, 150	3	3	3
Mechanical Technology, 172	1	1	1
Steam and Steam Machinery, 173	2	2	2
Physics, 195, Drawing, 171, or Shop-work, 150*	5	--	--
Electricity, 196, Drawing, 171, or Shop-work, 150*	--	5	--
Electrical Laboratory, 197, Drawing, 171, or Shop-work, 150*	--	--	5
Algebra, 263, Drawing, 171, or Shop-work, 150*	5	2	--
Geometry, 264, Drawing, 171, or Shop-work, 150*	--	3	5
Military Drill, 299	3	2	2

*Shop-work to be either wood-working or machine-shop.

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop, office, and library. On the second floor are the recitation-room, two drawing-rooms, and a wood-finishing room. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine, a one-horse-power gasoline engine (all of which were built by students), a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a 4½ x 6x6 Blake air-pump, an Ericsson hot-air pumping engine, apparatus for

making analyses of flue gases, a fuel calorimeter, a water-motor, a Worthington water-meter, a complete Westinghouse air-brake equipment, a New York air-brake equipment in section, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The boiler-house is equipped with one thirty-horse-power and two forty-horse-power horizontal return tubular boilers and two seventy-five-horse-power Babcock and Wilcox boilers and several pumps, all of which are available for experimental purposes.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 30-inch band-saw; a jig-saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a 38-inch grindstone; a wood trimmer; an adjustable miter-box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well-lighted and ventilated, neatly-paved room, 30 x 40 feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis and Eagan lathe with 10-foot bed, a 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, a 32-inch American drill press, a Brown & Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe-threading and cutting machine, a Greenwich arbor press and an electric center grinder. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by a twenty-five-horse-power Woodbury engine. When the shops are running one of the students has charge of the engine.

Subjects of Instruction.

135. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing. Two periods, first term. Required of Freshmen. Four periods, first term. Required of first-year students. Mr. VAUGHAN.

136. Elementary Mechanical Drawing.—Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen. Four periods, second term. Required of first-year students. Mr. VAUGHAN.

137. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods, third term. Required of Freshmen. Four periods, third term. Required of first-year students. Mr. VAUGHAN.

139. Mechanical Drawing.—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering, Chemistry and Dyeing. Mr. LAWRANCE.

140. Machine Design.—Study of the communication of motion by gear wheels, cams, belts, and link-work; automatic feed, parallel and quick motions. Epicylic trains. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical Engineering. Mr. LAWRANCE.

141. Machine Design.—Estimating, checking of working drawing, original design. Calculations and working drawings of types of engines, boilers, pumps, condensers, shafting, etc. Two periods, first term. Three periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. LAWRANCE.

Students are required to stamp their drawings with the College stamp, similar to the practice in the drawing-rooms of the large manufacturing companies. Encouragement is given to original design, especially when carried through the shops to a complete working machine.

146. **Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practise in making simple exercises in wood. Elementary exercises in wood-turning. Two periods. Required of Freshmen. Two periods. Required of first-year students. Mr. CLAY.

147. **Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Required of Freshmen and first-year students. Mr. DEAL.

148. **Forge-work.**—Exercises in working with steel. Tempering. Case-hardening. Two periods, first term. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. DEAL.

149. **Pattern-making.**—Exercises in making patterns and moulds of machine parts. Two periods, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CLAY.

150. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Three periods. Required of second-year students in Mechanic Arts. Mr. PARK.

151. **Machine-shop Work.**—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Three periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

152. **Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of first-year students in Mechanic Arts. Mr. CLAY.

157. **Boilers.**—Steam generation; types, care and management; fittings and appliances, corrosion and incrustation; combustion of fuel. Boiler power. Two periods, first term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and in Mining Engineering. Professor THOMAS.

158. **Steam Engines.**—Types—simple and compound, and triple expansion, automatic, Corliss, rotary, turbines. Care and management. Indicators, indicated and brake horse-power. Condensers. Two periods, second term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and Mining Engineering. Professor THOMAS.

159. Valve Gears.—Plain slide valve, balance valve, Corliss and other form valve gears, link and radial reversing gears. Shaft governors. Bilgram and Zeuner valve diagrams. Two periods, third term. Required of Juniors in Mechanical Engineering, and of Seniors in Mining Engineering. Professor THOMAS.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Four periods, third term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

162. Gas Engines.—Theory of the gas engine. Various types of gas, gasoline, and oil engines. Brake and indicated horse-power; efficiency. Gas producers. Five periods, first term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Carbon dioxide and compressed-air machines. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Water-works machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. One period, second and third terms. Required of Seniors in Mechanical Engineering. Professor THOMAS.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. LAWRANCE.

168. Steam Engineering Laboratory.—Practise in engine running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Two periods; required of Seniors in Mechanical Engineering. One period; required of Seniors in Electrical Engineering. A brief course in surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines, and machinery by the use of transit and level. Professor THOMAS and Mr. LAWRANCE.

169. Applied Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles

to various engineering problems. Three periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. LAWRANCE.

171. **Mechanical Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Required of second-year Mechanic Arts students. Two periods, first term. Required of second-year students in Applied Electricity. Mr. LAWRANCE.

172. **Mechanical Technology.**—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangement and sizes of belting, pulleys, and shafting. One period. Required of second-year students in Mechanic Arts and Applied Electricity. Professor THOMAS.

173. **Steam and Steam Machinery.**—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Two periods. Required of second-year students in Mechanic Arts and Applied Electricity. Professor THOMAS.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student, he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.

A two-year course in Applied Electricity is offered to those who wish to fit themselves for positions as dynamo tender, motorman, or electrician.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	--
Geometry, 264	--	3	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Forge-work, 148	2	--	--
Pattern-making, 149	--	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dynamo Machinery, 183	2	2	2
Electrical Laboratory, 180	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Applied Mechanics, 169	3	3	3
Analytical Geometry, 268	4	4	--
Calculus, 269	--	--	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Alternating Currents, 184	3	--	--
Electric Power Transmission, 185	--	3	--
Electric Light and Railway Systems, 186	--	--	3
Electrical Engineering (laboratory), 189	4	--	--
Electrical Engineering (laboratory), 190	--	4	4
Electrical Design, 191	2	2	2
Electrical Engineering, 192	--	--	2
Boilers, 157	2	--	--
Steam Engines, 158	--	2	--
Steam Engineering (laboratory), 168	1	1	1
Calculus, 269	3	--	--
Hydraulics, 110	--	3	3
Business Law, 295	1	1	1
English Literature, 276 and 274	2	2	2
Military Drill, 299	3	2	2

IVa. The Two-year Course in Applied Electricity.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	4	--	--
Mechanical Drawing, 136	--	4	--
Descriptive Geometry, 137	--	--	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 261	5	--	--
Algebra, 262	--	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

Physics, 195	5	--	--
Electricity, 196	--	5	--
Electrical Laboratory, 197	--	--	5
Electrical Construction, 198	--	2	2
Mechanical Drawing, 171	2	--	--
Machine-shop Work, 150	2	2	2
Mechanical Technology, 172	1	1	1
Steam Engineering Machinery, 173	2	2	2
Algebra, 263	5	2	--
Geometry, 264	--	3	5
Military Drill, 299	3	2	2

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Four periods. Required of Freshmen. Professor PAINE.

177. Elementary Lessons in Electricity and Magnetism.—Two periods. Required of Sophomores. Professor PAINE.

178. Physical Laboratory.—Fundamental measurements of length, mass, and time. Determination of laws and forces, velocities, friction and periodic motion. Study of mechanical advantage and efficiency of simple machines. The strength of various metals and wood. One period. Required of Freshmen. Mr. HEWLETT.

179. Physical Laboratory.—Continuation of Course 178. Elementary experiments in magnetism. The electric circuit. Primary batteries. Measurement of electro-motive force, current, and resistance. Telegraph and telephone circuits. Required of Sophomores in Electrical and Mechanical Engineering. Mr. ADAMS.

180. Electrical Laboratory.—Use of laboratory instruments. Advanced measurement of resistance, current, and electro-motive force. Use of condensers. Electrical testing of lines for insulation and grounds. Magnetic properties of iron. Two periods. Required of Juniors in Electrical Engineering. Mr. ADAMS.

ELECTRICAL ENGINEERING.

Equipment.

The electrical engineering laboratory is a small brick building 30 by 50. It contains the electric light plant, consisting of a 35-horse-power automatic Skinner engine, an 11.5 K. W. 110-volt Westinghouse dynamo, a 30 K. W. 3-phase 550-volt Westinghouse alternator, and a 20 K. W. 2-phase 110-volt Lincoln alternator. The laboratory

contains in addition to this one 6-light T. H. arc machine, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens & Halske dynamo, connected in such a way as to give 3-phase currents, one 2-horse-power 3-phase 110-volt Gen. Elect. Co. motor, one 2 K. W. 110-volt LaRoche alternator. Two 25-horse-power Gen. Elect. Co. 500-volt railway motors. One 10-horse-power Stanly induction motor. It also contains transformers, condensers, arc lamps, circuit breakers, etc.

The department possesses a small library of standard books on all branches of physics and electrical engineering.

183. Dynamo Machinery.—A study of direct current dynamos and motors. Efficiency. Characteristic curves. Required of Juniors in Mechanical and Electrical Engineering. Two periods. Professor PAINE.

184. Alternating Currents of Electricity.—Principles of alternating currents. Alternating current generators and motors. Static and rotary transformers. Three periods, first term. Required of Seniors in Electrical Engineering. Professor PAINE.

185. Electric Power Transmission.—Direct current systems. Power transmission by single and polyphase alternating currents. Long distance, high potential lines. Three periods, second term. Required of Seniors in Electrical Engineering. Professor PAINE.

186. Electric Light and Railway Systems.—The design and operation of lighting and railway plants. Estimates of costs. Three hours, third term. Required of Seniors in Electrical Engineering. Professor PAINE.

189. Electrical Engineering Laboratory.—Laboratory methods. Calibration of electrical measuring instruments. Study of direct current apparatus. Characteristic curves. Photometry. Efficiency of direct current generators and motors. Four periods, first term. Required of Seniors in Electrical Engineering. Mr. ADAMS.

190. Electrical Engineering Laboratory.—Characteristic curves of alternating current generators. Study of inductance and capacity. Efficiency of alternating current apparatus, including motors, generators, and transformers. Four periods, second and third terms. Required of Seniors in Electrical Engineering. Mr. ADAMS.

191. Electrical Design.—The design of magnets, rheostats, dynamos, and transformers. Two periods. Required of Seniors in Electrical Engineering. Mr. ADAMS.

192. Electrical Engineering Practice.—The application of electricity for lighting and power. Electricity in cotton mills and machine shops. Two periods, third term. Required of Seniors in Electrical Engineering. Professor PAINE.

195. Physics.—The properties of matter. Mechanics. The principles of the simple machines. Five periods. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. HEWLETT.

196. Electricity.—Principles of the electric circuit. Batteries. Electro-magnets. Dynamos. Motors. Electric bell, telephone, and telegraph systems. Five periods, second term. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. HEWLETT.

197. Electrical Laboratory.—Management of dynamos and motors. Care of station equipment. Study of arc lamps. Transformers. Five periods, third term. Required of second-year students in Applied Electricity and in Mechanic Arts. Mr. HEWLETT.

198. Electrical Construction.—Bell wiring. Electric light wiring. Coil winding for dynamo and motor fields. Armature winding. Repair of electrical apparatus. Two periods, second and third terms. Required of second-year students in Applied Electricity. Mr. ADAMS.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery, and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	--
Geometry, 264	--	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Forge-work, 148	1	--	--
Pattern-making, 149	--	1	1
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 111	1	--	--
Graphic Statics, 101	--	1	1
Surveying, 102 and 103	2	2	2
Surveying (field-work), 104	2	2	2
Drawing, 105	2	2	2
Mechanics, 128	3	3	3
Analytical Geometry, 268	4	4	--
Calculus, 269	--	--	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Mining, 296	--	4	4
Ore Dressing, 207	4	--	--
Geology, 211	2	2	2
Metallurgy, 208	--	2	2
Mineralogy, 212	4	--	--
Assaying, 209	--	2	2
Boilers, 157	2	--	--
Steam Engines, 158	--	2	--
Valve Gears, 159	--	--	2
Hydraulics, 110	--	3	3
Calculus, 269	3	--	--
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, sloping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining.

208. Metallurgy.—Introductory: combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining.

GEOLOGY AND MINERALOGY.

211. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors in Civil Engineering, in Mining, and in Chemistry.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining.

COURSES IN INDUSTRIAL CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in chemistry is arranged to prepare young men for careers in the analytical or the operating departments of the various chemical industries. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

Raleigh as a Chemical Center.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station are located in Raleigh, and through the courtesy of the officials in charge of these departments our students are welcomed whenever they desire to visit them.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

Chemical Equipment.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing oils, metallurgy of iron, metallurgy of copper, dyeing of cotton goods, in agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and eleven other States.

VI. The Four-year Course in Industrial Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	--	--
Mechanical Drawing, 136	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 263	5	2	--
Geometry, 264	--	3	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Elementary Botany, 241	3	3	3
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Agricultural Chemistry, 232	2	2	2
Organic Chemistry, 218	2	2	2
Analytical Chemistry, 220 and 226	8	8	8
Chemical Seminary	1	1	1
Bacteriology, 251	2	2	2
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Industrial Chemistry, 233	2	2	2
Analytical Chemistry, 226	7	7	7
Organic Chemistry (laboratory), 219	4	4	4
Chemical Seminary	1	1	1
Bacteriology, 252	2	2	2
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor HOFFMAN.

217. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

218. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Required of Juniors in Chemistry. Professor WITHERS.

220. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Eight periods, first term. Required of Juniors in Chemistry. Doctor HOFFMAN.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Eight periods, second and third terms. Required of Juniors in Chemistry. Seven periods. Required of Seniors in Chemistry. Doctor HOFFMAN.

228. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry*, translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dye-stuffs is prepared and the properties studied. Four periods. Required of Seniors in Chemistry. Doctor SYME.

232. Agricultural Chemistry.—Ingle's *Agricultural Chemistry.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from

the chemical standpoint. Two periods. Required of Juniors in Chemistry. Professor WITHERS.

233. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Two periods. Required of Seniors in Chemistry. Professor WITHERS.

BOTANY.

241. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field-work and simple independent investigations. Three periods. Required of Sophomores in Chemistry. Professor STEVENS.

BACTERIOLOGY.

251. General Bacteriology.—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor STEVENS and Mr. TEMPLE.

252. Bacteriology Advanced.—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS.

MATHEMATICS.

While the subject of Mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet, at the same time, it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations,

written exercises and lectures, the scope being quite sufficient for the needs of the institution.

261. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. J. A. PARK and Mr. RICHARDSON.

262. Algebra.—Wells's *Higher Algebra* up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. J. A. PARK and Mr. RICHARDSON.

263. Algebra.—Wells's *Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Required of Freshmen and second-year students in Mechanic Arts. Mr. RICHARDSON and Mr. J. A. PARK.

264. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Three periods, second term; five periods, third term. Required of all Freshmen and second-year students in Mechanic Arts. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

265. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

266. Advanced Algebra.—Wells's *Higher Algebra.* Compound interest and annuities, permutations, combinations, continued fractions, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES and Mr. J. A. PARK.

267. Trigonometry.—Phillips & Strong's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES and Mr. J. A. PARK.

268. Analytical Geometry.—Nichols's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Four periods, first and second terms. Required of Juniors in Engineering. Professor YATES.

269. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of undeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Required of Juniors. Four periods, third term. Required of Seniors, three periods, first term. Professor YATES.

ENGLISH.

271. English Composition.—A drill on the forms of the language, the correct relation of words, the sentence, the paragraph. Daily written exercises. Three periods. Required of first-year students. Doctor SUMMEY and Mr. BONN.

272. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. BONN.

273. Rhetoric, Criticisms, Essays.—The student is taught the essentials of a good style by constant practise. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. BONN.

274. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

275. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

276. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor HILL.

HISTORY.

281. American History.—By means of a text-book, supplemented by lectures and frequent assignment of topics for special study, students are in this course familiarized with the leading facts in the history of the United States. Two periods. Required of first-year students. Doctor SUMMEY.

283. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

295. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parson's *Laws of Business*. One period, Seniors. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

297. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. President WINSTON.

298. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

299. Drill.—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours. Required of all classes except Seniors. Seniors are to either take drill or two extra hours in some other subject instead. Commandant and Officers of the Battalion.

300. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Juniors. Lieutenant YOUNG.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.
VIIIb. Special Ten-weeks Course in Carding and Spinning.
VIIIc. Special Ten-weeks Course in Weaving and Designing.

THE TEXTILE DEPARTMENT.

The Textile Department is located in a new building recently erected for its use. The instruction given in this department is in the theory and practice of cotton manufacturing. The building, which is a typical cotton mill, is fully equipped with all the necessary machinery for manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department three courses of instruction are offered, the Four-year Course leading to the degree of Bachelor of Engineering, the Two-year Course and the Ten-weeks Winter Course in carding and spinning, weaving, and designing.

Four-year Course.

The Four-year Course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The Two-year Course is offered to mature students who cannot spend the time required for the Four-year Course, or who have had considerable practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work. Students eighteen years of age or over are admitted to this course without examination.

Special Ten-weeks Courses.

Special Ten-weeks Courses are offered to practical mill men in carding and spinning, weaving and designing. These courses are given during the winter of each year, beginning with the opening of College in January and lasting until the middle of March. They aim to meet a demand from cotton-mill superintendents, overseers, and practical men for special instruction in the subjects named.

The textile instruction given is of a practical nature and covers the entire ground of cotton manufacturing. Its object is to prepare the student for a useful career in this industry. There is a demand from the mills in this and other States for young men technically trained in the manufacture of cotton goods, especially of the finer grades. That the graduates are meeting with success in this industry is shown by the positions held by them. Among these are president, secretary and treasurer, manager, superintendent, designer, overseer of weaving, mill architect, machinery salesman. In fact, the graduates have gone into almost every branch of cotton manufacturing and have met with success. All have received the same training. The point to which each has advanced has depended upon the ability to deal with the general problems of manufacturing.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building 125 x 75 feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery

equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening-room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding-room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11 x 5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9 x 4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7 x 3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6 x 2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning-room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Ma-

chine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by The T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; one Northrop-Draper sateen loom; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn & Lincoln, Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2 x 1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One Crompton 4 x 1 box gingham loom, one Crompton 4 x 1 box loom with 20-harness dobby, one Crompton single-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4 x 4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One 2 x 1 box loom with 600-hook Jacquard machine, made by Joseph Battles Manufacturing Co., Lawrence, Mass. One 4 x 1 box table-cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room 70 x 50 feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, and alkalies, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of larger quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

Cassela Color Co., N. Y.
Continental Color and Chemical Co., N. Y.
H. A. Metz & Co., N. Y. (successors to Victor Koechl & Co.).
Berlin Aniline Works, N. Y.
A. Klipstein & Co., N. Y.
C. Bischoff & Co., N. Y.
Kuttroff, Pickhardt & Co., N. Y.
New York and Boston Dyewood Co., N. Y.
Schoelkoff, Hartford & Hanna Co., Buffalo, N. Y.
F. E. Atteaux & Co., Boston, Mass.
Read, Holliday & Sons, Ltd., N. Y.
Société Anonyne des Matiéres Colorantes, Paris.
O. S. Janney & Co., Philadelphia.
Geisenheimer & Co., N. Y.
Roessler and Hasslacher Chemical Co., N. Y.
Jas. S. and Thos. Elkington, Philadelphia, Pa.
Arabol Mfg. Co., N. Y.
Kalle & Co., N. Y.
Geigy Aniline and Extract Co., N. Y.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

Heating Plant.

Steam Coils and Blowing Fan, made by B. F. Sturtevant Co., Boston, Mass.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301†	1	1	1
Weaving, 302	2	2	2
Free-hand Drawing, 316	2	--	--
Mechanical Drawing, 317	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Algebra, 335	5	2	--
Geometry, 336	--	3	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Military Drill, 359	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practise periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	--	--
Advanced Algebra, 338	--	3	--
Trigonometry, 339	--	2	5
English, 342 and 344	3	3	3
Military Drill, 359	3	2	2

Junior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Machine-shop Work, 324	2	2	2
English and History, 347 and 345	2	2	2
Political Economy	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	2	2	2
Cloth Analysis, 304	1	1	1
Warp Preparation (special), 302	--	--	2
Dyeing, 306	2	2	2
Boilers, 326‡	2	--	--
Engines, 227‡	--	2	--
English, 345 and 343	2	2	2
Business Law, 348	1	1	1
Military Drill, 359	3	2	2
May substitute Organic Chemistry, 311‡	2	2	2

VIIIa. The Two-year Course in Textile Industry.

First Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Free-hand Drawing, 316	2	--	--
Mechanical Drawing, 317	--	2	--
Descriptive Geometry, 318	--	--	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Arithmetic, 333	5	--	--
Algebra, 334	--	5	5
English, 341	3	3	3
Military Drill, 359	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	5	5	5
Weaving, 302	6	6	6
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Machine-shop, 324	2	2	2
Forge-work, 322	1	--	--
Pattern-making, 323	--	1	1
English, 342 and 344	3	3	3
Military Drill, 359	3	3	3

Description of Subjects.

301. Carding and Spinning.—Lectures and recitations; practise in operating card and spinning room machinery. Cotton: classifying the plant, its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill: selecting and mixing. Openers and lappers: card; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: Cotton Mill Processes and Calculations, by Tompkins; Cotton Spinning, by Nasmith. Required of Freshmen and Sophomores, Juniors and Seniors in the Four-year Course and of first and second year students in the Two-year Course. Assistant Professor PARKER.

302. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinders; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking

motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: Weaving, Plain and Fancy, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor NELSON and Mr. STEED.

303. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honey-comb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piqués. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of

plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors in the Four-year Course, and of first and second year students in the Short Course. Professor NELSON, Mr. SHUFORD, and Mr. STEED.

304. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yards. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor NELSON, Mr. SHUFORD, and Mr. STEED.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dyestuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, history, mathematics, physics, and general chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	1	1	1
Weaving, 302	2	2	2
Free-hand Drawing, 316	2	--	--
Mechanical Drawing, 317	--	2	--
Descriptive Geometry, 137	--	--	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Algebra, 335	5	2	--
Geometry, 336	--	3	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Military Drill, 359	3	2	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	--	--
Advanced Algebra, 338	--	3	--
Trigonometry, 339	--	2	5
English, 342 and 344	3	3	3
Military Drill, 299	3	3	3

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 311	2	2	2
Analytical Chemistry, 312 and 313	8	8	8
Chemical Summary	1	1	1
English and History, 345 and 347	2	2	2
Business Law and Civics, 348 and 349	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2

Senior Year.

Dyeing, 306	2	2	2
Industrial Chemistry, 315	2	2	2
Analytical Chemistry, 313	7	7	7
Organic Chemistry (laboratory), 314	4	4	4
Chemical Summary	1	1	1
English, 345 and 343	2	2	2
Political Economy, 351 and 352	1	1	1
Military Drill, 359	3	2	2

Description of Subject.

306. With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalies, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyes and their application to cotton. After-treatment of direct colors, including diazotising and developing

and the topping with basic colors. The application to cotton of basic colors, acid colors, mordant colors, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur colors, indigo, natural and artificial, aniline black, turkey red, and other insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabric composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalies and reducing agents on several samples taken from the different classes of dyestuffs. The use of hyraldite and other stripping agents.

Olney's Textile Chemistry and Dyeing is used as a text in connection with a course of lectures which will include the consideration of many difficult problems that arise in the dye-house. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

307. Dyeing Laboratory.—A series of experiments are performed which cover all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors, and the dyeing of sulphur colors. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a scrap-book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as the printing of samples on the laboratory printing machine. This work, will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

CHEMISTRY.*

309. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor HOFFMAN.

310. Inorganic Chemistry.—Laboratory work. Remsen and Randall's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

311. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Two periods. Required of Juniors in Dyeing and elective for Seniors in Textile Industry. Professor WITHERS.

312. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Eight periods, first term. Required of Juniors in Dyeing. Doctor HOFFMAN.

313. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Nine periods, second and third terms. Required of Juniors in Chemistry and Dyeing. Seven periods. Required of Seniors in Dyeing. Doctor HOFFMAN.

314. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dye-stuffs is prepared and the properties studied. Four periods. Required of Seniors in Dyeing. Doctor SYME.

315. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the

*For further information, see course in Chemistry.

more important chemical industries. A discussion of the materials of engineering. Two periods. Required of Seniors in Dyeing. Professor WITHERS.

MECHANICAL ENGINEERING.†

316. **Free-hand Drawing.**—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. VAUGHAN.

317. **Elementary Mechanical Drawing.**—Use of instruments; geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen and first-year students. Mr. VAUGHAN.

318. **Descriptive Geometry Drawing.**—Elementary principles; cylinders, cones, and prisms; intersection development of surfaces, miscellaneous problems. Two periods, third term. Required of Sophomores. Mr. VAUGHAN.

320. **Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practise in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY.

321. **Forge-work.**—Exercises in working with iron, welding; uses and care of forge-tools and fires. Two periods. Required of Freshmen. Mr. DEAL.

324. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Juniors. Mr. PARK.

322. **Forge-work.**—Exercises in working with steel; tempering; case-hardening. One period, first term. Required of second-year students. Mr. DEAL.

323. **Pattern-making.**—Exercises in making patterns, generally of machine parts. One period, second and third terms. Required of second-year students. Mr. CLAY.

326. **Boilers.**—Steam generation; types, care and management; fittings and appliances; corrosion and incrustation; combustion of fuel; boiler power. Two periods, first term. Required of Seniors. Professor THOMAS.

327. **Steam-engines.**—Types—simple and compound and triple expansion, automatic, Corliss, rotary. Care and management. Indicators, indicated and brake horse-power, condensers. Two periods, second term. Required of Seniors. Professor THOMAS.

†For full information, see course in Mechanical Engineering.

328. **Valve Gears.**—Plain slide valve, balanced valves, Corliss and other form valve gears. Link and radial reversing gears. Shaft governors. Bilgram and Zeuner valve diagrams. Two periods, third term. Required of Seniors. Professor THOMAS.

PHYSICS.*

331. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. HEWLETT.

MATHEMATICS.†

333. **Arithmetic.**—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. J. A. PARK and Mr. RICHARDSON.

334. **Algebra.**—Wells's *Higher Algebra.* Up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. J. A. PARK and Mr. RICHARDSON.

335. **Algebra (Continued).**—Wells's *Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Required of Freshmen. Mr. RICHARDSON and Mr. J. A. PARK.

336. **Geometry.**—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Three periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

337. **Solid Geometry.**—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

338. **Advanced Algebra.**—Wells's *Higher Algebra.* Compound interest and annuities, permutations, combinations, continued fractions, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES and Mr. J. A. PARK.

339. **Trigonometry.**—Phillips and Strong's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES and Mr. J. A. PARK.

*For full information, see course in Electrical Engineering.

†For full information, see course in Engineering.

ENGLISH.

341. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. BONN.

342. Rhetoric, Criticisms, Essays.—The student is taught the essentials of good style by constant practise. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, second term. Professor HILL, Doctor SUMMEY, and Mr. BONN.

343. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of many exercises. Required of Seniors. Two periods, third term. Professor HILL.

344. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

345. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

347. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

348. Business Law.—Parson's *Laws of Business.* This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parson's *Laws of Business.* One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

351. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. President WINSTON.

352. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

359. Drill.—Schools of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours first term, two periods, second and third terms. Required of all classes except Seniors. Seniors are to either take drill or two extra hours in some other subject instead. Commandant and Officers of the Battalion.

360. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

NORMAL COURSES.

I. For Rural Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) Summer Course.

II. For City Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) Summer Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education is being introduced into our public schools, and the College has a constant demand for well-trained industrial teachers. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short courses or the Summer Courses, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the colleges, except in the Summer Courses.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Nature Study { Plants	3	3	3
Nature Study { Animals	3	3	3
English	3	3	3
Mathematics	5	5	5
Military Drill	3	2	2

Second Year.

Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	2	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Farm Equipment, Soils, and Crops	4	4	4
Nature Study	3	3	3
Mathematics	4	4	4
English	3	3	3
Military Drill	3	3	3

II. Courses for City Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Wood-work	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	3

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing	2	2	2
Wood-work	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	4	4	4
Military Drill	3	2	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology, Physiological Botany 3.

(b) ONE-YEAR COURSE.

Drawing	3	4	4
Wood-work	4	5	5
Forge-work	2	2	2
Architecture	2	--	--
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	2	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

DONATIONS.

The College makes thankful acknowledgment of the receipt of the following gifts during the year:

To the Agricultural Department.

The A. C. Cole Company of Charlotte, N. C.—One Cole Universal Planter to the Biological Club.

John Deer Plow Company, Baltimore, Md.—On 13-inch plow to the Rural Science Club.

Chattanooga Plow Company, Chattanooga, Tenn.—One 7-inch plow to the Rural Science Club.

D. H. Burrill Company, Little Falls, N. Y.—One 4-bottle "Facile, Jr." Tester, complete, to the Rural Science Club.

T. W. Wood & Sons, Richmond, Va.—One book, "Southern Gardener's Practical Manual," to the Rural Science Club.

The American Jersey Cattle Club, New York City.—Sixty-five volumes Herd-book.

German Hanoverian and Oldenburg Coach Horse Association, Lafayette, Ind.—Two volumes.

National Register Belgium Draft Horse, Wabash, Ind.—Two volumes.

American Yorkshire Association, White Bear Lake, Wis.—Three volumes.

Red Polled Cattle Club of America, Dayton, Ohio.—Two volumes.

American Pole Durham Breeders' Association, Indianapolis, Ind.—Two volumes.

American Devon Cattle Club, Newark, Ohio.—Seven volumes.

National French Draft Horse Association, Fairfield, Iowa.—Four volumes.

Continental Horsett Club, Mechanicsburg, Ohio.—Three volumes.

American Percheron Horse Breeders' and Importers' Association, Chicago, Ill.—Two volumes.

Southwestern Poland China Association, Gadson, Tenn.—Two volumes.

Hampshire Down Sheep Breeders' Association, Nottawa, Mich.—Four volumes.

Browns Swiss Cattle Breeders' Association, Oswego, N. Y.—Seven volumes.

American Shropshire Registry Association, Lafayette, Ind.—Nineteen volumes.

American Rambouillet Sheep Breeders' Association, Millford Center, Ohio.—Seven volumes.

To the Textile Department.

Draper Company, Hopedale, Mass.—One 100-spindle twister, loom and reel supplies.

D. A. Tompkins Company, Charlotte, N. C.—One spinning-frame, one spooler, one reel, one slasher beam.

Kilburn-Lincoln Co., Fall River, Mass.—One high-speed sheeting-loom.

Universal Winding Company, Boston, Mass.—Old cone-winder replaced by latest cone-winding machine.

Whitin Machine Works, Whitinsville, Mass.—Loom supplies.

Mason Machine Works, Taunton, Mass.—Spinning-frame supplies.

DeHaven Manufacturing Company, Brooklyn, N. Y.—Spinning-frame travelers.

National Ring Traveler Company, Providence, R. I.—Twister travelers.

Steel Heddle Company, Philadelphia, Pa.—Set of heddles and harness shafts, two knot tyers.

Emmons Loom Harness Company, Lawrence, Mass.—Loom reed.

Carruthers Company, Lowell, Mass.—Loom reed and slasher combs.

Hampton Company, Easthampton, Mass.—Mercerized yarns.

Department of Commerce and Labor.—Complete set of samples of cotton goods imported into China.

Cheney Brothers, South Manchester, Conn.—Silk samples, showing processes from cocoon to finished fabric.

P. H. Hanes Underwear Company, Winston, N. C.—Several pounds of knit goods.

Berlin Aniline Works, New York.—Fifty copies of "Textile Dyeing."

Cassella Color Company, New York.—Fifteen pounds sulphide of sodium, one book, "Wool Dyeing," and one book, "Dyeing of Mixed Fabrics."

Royal Chemical Company, Phenix, R. I.—One gallon turkey red oil.

Roessler C. Hasslacher Chemical Company.—One vat for bleaching with peroxide of sodium.

Universal Dye Tub Company, Atlanta, Ga.—One Lightfoot raw stock dyeing machine.

Courtesies Extended to Textile Department.

Textile Excelsior, Charlotte, N. C.
Textile Manufacturers' Journal, New York.
Fiber and Fabric, Boston, Mass.
Manufacturers' Record, Baltimore, Md.
Textile World Record, Boston, Mass.
Textile American, Boston, Mass.
The Manufacturer, Philadelphia, Pa.
The Tradesman, Chattanooga, Tenn.
American Industries, New York City.
Cotton, Atlanta, Ga.
American Cotton and Wood Reporter, Boston, Mass.
Mill News, Charlotte, N. C.
The Dyer and Calico Printer, London, Eng.
Cassella Color Company, New York City.
Pilot Cotton Mills, Raleigh, N. C.
Caraleigh Cotton Mills, Raleigh, N. C.
Raleigh Cotton Mills, Raleigh, N. C.

To the Chemistry Department.

The Southern Cotton Oil Company, Charlotte, N. C. (through E. W. Thompson, District Manager).—Sample jars of cotton seed and cotton-seed products.

The Union Carbide Company, Niagara Falls, N. Y. (through E. F. Price, General Manager).—Sample jars containing specimens of calcium carbide.

Virginia-Carolina Chemical Company (through F. B. Carpenter, Chief Chemist).—Samples of the different materials used in the manufacture of fertilizers.

To the Library.

William Boylan, Raleigh, N. C.—Copy of a *facsimile* reproduction of a portion of *The Minerva* of August 10, 1809, containing an address delivered on June 1, 1809, in which mention was made of the Mecklenburg Declaration of Independence.

CATALOGUE OF STUDENTS.

GRADUATES.

Name.	*Post-office.*	*Course.*
Wiley Theodore Clay, B.E.,	Hickory,	M. E.
Clarence Wilson Hewlett, B.E.,	Wilson,	E. E.
William Kerr, B.S.,	Bryson City,	Agr.
John Alsey Park, B.E.,	Raleigh,	C. E.
Samuel Oscar Perkins, B.S.,	Muttenz,	Chem.
James Clarence Temple, B.Agr.,	Sanford,	Chem.
Lillian Lee Vaughan, B.E.,	Franklin, Va.,	M. E.

SENIOR CLASS.

Herbert Scandlin Battie,	Greensboro,	C. E.
Joe Pittman Bivens,	Cottonville,	E. E.
Carney John Bryan,	Washington,	E. E.
Lindsay Ferguson Carleton,	Boomer,	E. E.
Robert Hill Carter,	King's Creek,	E. E.
John Washington Clark,	Raleigh,	Tex.
Claud Council Dawson,	Grifton,	Tex.
Jacob Tatum Eaton,	Farmington,	Agr.
Seba Eldridge,	Dunn,	C. E.
Benjamin Bryan Everett,	Palmyra,	Agr.
John Lindsay Ferguson,	Kendal,	E. E.
Elias VanBuren Fowler,	Glenville,	E. E.
Clement Leinster Garner,	Beaufort,	C. E.
Lovic Rogers Gilbert,	Potecasi,	Tex.
Roy Joseph Gill,	Raleigh,	C. E.
Robert Strickler Graves,	Syria, Va.,	E. E.
George Rom Hardesty,	Raleigh,	E. E.
Philip William Hardie,	Brown Summit,	C. E.
Joktan LaFayette Hemphill,	Morganton,	E. E.
Lawrence James Herring,	Clinton,	Agr.
Guy Francis Hinshaw,	Winston-Salem,	C. E.
William Norman Holt,	Smithfield,	Tex.
Albert Carl Jones,	Trinity,	Agr.

Name.	*Post-office.*	*Course.*
William Whitmore Jones,	Franklin,	E. E.
LaFayette Franck Koonce,	Richlands,	Agr.
Charles Edward Latta,	Raleigh,	Tex.
Lewis Edgar Lougee,	Raleigh,	Chem.
Henry Kreiger McConnell,	Louisville, Ky.,	Chem.
Oscar Franklin McNairy,	Greensboro,	C. E.
Eugene Franklin Meador,	Reidsville,	M. E.
Bennett Taylor Mial,	Raleigh,	M. E.
Frank Curtis Michael,	Gibsonville,	E. E.
John Maple Mills,	Raleigh,	M. E.
Henry Starbuck Montague,	Winston-Salem,	Chem.
John Lightfoot Morson,	Raleigh,	C. E.
James Elwood Overton,	Ahoskie,	Agr.
James Caleb Parker,	Elizabeth City,	Agr.
Thomas Franklin Parker,	Raleigh,	E. E.
Fred. Maynard Parks,	Morganton,	E. E.
Arthur Lee Paschall,	Vaughan,	Agr.
Guy Pinner,	Elizabeth City,	C. E.
Winslow Gerald Pitman,	Lumberton,	M. E.
James Kemp Plummer,	Middleburg,	Chem.
Leon Jacob Schwab,	Goldsboro,	C. E.
John Oscar Shuford,	Gastonia,	E. E.
William Crawford Staples,	Reidsville,	Tex.
Vance Sykes,	Efland, R. 2,	C. E.
Nelson Hall Tate,	Littleton,	M. E.
Luther Russell Tillett,	Carolla,	C. E.
William Brooks Truitt,	Greensboro,	M. E.
John Edwin Turlington,	Clinton, R. 1,	Agr.
Edmund Farriss Ward,	Lumberton,	Agr.
Lindsay Marade Weaver,	Lexington,	M. E.
John Jackson Wells,	Elm City,	C. E.
David Lyndon White,	Trinity,	Agr.
Cecil Bernard Whitehurst,	Beaufort,	E. E.
Arthur John Wilson,	Knoxville, Ill.,	Chem.

JUNIOR CLASS.

Albert Edwin Abernethy,	Hickory,	Agr.
Frank Oscar Baldwin,	Raleigh,	Chem.
George Francis Bason,	Charlotte,	E. E.

Name.	*Post-office.*	*Course.*
John Leland Becton,	Goldsboro,	C. E
Harwood Beebe,	Baltimore, Md.,	C. E.
William Lamar Black,	Mooresville,	E. E.
Asa Gray Boynton,	Biltmore,	C. E.
Frank Hamilton Brown,	Cullowhee,	Agr.
John Harvey Bryan,	Goldsboro,	M. E.
William Bryant Burgess,	Rocky Mount,	E. E.
Lewellyn Hill Couch,	Lexington,	E. E.
William Osborne Crump,	Polkton,	E. E.
Tyler Bennett Dunlap,	Cedar Hill,	E. E.
Alvin Deans Dupree,	Greenville,	C. E.
Raymond Rowe Eagle,	Statesville,	C. E.
Minnie Luther Eargle,	Delmar, S. C.,	Agr.
William Henry Eskridge,	Shelby,	C. E.
Isaac Herbert Farmer,	Wilson,	C. E.
Benjamin Troy Ferguson,	Kimbolton,	Agr.
Warren Gross Ferguson,	Southern Pines,	E. E.
Percy Leigh Gainey,	Fayetteville, R. 7,	Agr.
Junius Talmage Gardner,	Shelby,	C. E.
Seth Mann Gibbs,	Middletown,	C. E.
Moses Henry Gold,	Beaufort,	C. E.
John David Grady,	Albertson,	Agr.
Edward William Gregory,	Elizabeth City,	E. E.
Thomas Delaware Grimshawe,	Montvale,	C. E.
Dorsey Yates Hagan,	Greensboro,	C. E.
Maurice Hendrick,	Shelby,	Tex.
John McLaurin Jones,	Durham,	E. E.
Herbert William Kueffner,	Durham,	C. E.
Claude Milton Lambe,	Durham,	C. E.
Benjamin Bussey Lattimore,	Shelby,	C. E.
David Lindsay,	Stoneville, R. 1,	Tex.
George Lafayette Lyerly,	Hickory,	E. E.
William Garland McBrayer,	Shelby,	C. E.
Clarence Talmage Marsh,	Aulander,	C. E.
David John Middleton,	Warsaw, R. 2,	Agr.
John Shaw Pescud,	Raleigh,	C. E.
Benjamin Franklin Pittman,	Tarboro,	E. E.
Lawrence Lyon Pittman,	Whitakers,	C. E.
Ruble Poole,	Randleman, R. 3,	C. E.

Name.	*Post-office.*	*Course.*
Harry Alexander Powell,	Fair Bluff,	Tex.
James Alexander Powell,	Raleigh,	M. E.
Thomas Milton Poyner,	Poplar Branch,	C. E.
Edgar English Smith,	Greensboro,	Agr.
James Lawrence Smith, Jr.,	Duke,	C. E.
Jesse Page Spoon,	Hartshorn,	C. E.
Harris Ingram Stanback,	Mt. Gilead,	E. E.
John Snipes Stroud,	Bynum,	Tex.
William Thaddeus Temple,	Sanford,	M. E.
James Fenton Towe,	Chapanoke,	E. E.
John Lawrence Von Glahn,	Wilmington,	C. E.
Royall Edward White,	Aulander,	C. E.
John C. Williams,	Duke, R. 1,	C. E.
Robert Job Wyatt,	Raleigh,	M. E.
Woodfin Bradsher Yarborough,	Locust Hill,	E. E.
John Franklin Ziglar,	Winston-Salem,	C. E.

SOPHOMORE CLASS.

John Allen Arey,	Elmwood,	Agr.
Arthur Norman Armstrong,	Creswell,	Tex.
John William Barrett, Jr.,	Rocky Mount,	Agr.
Henry Nathan Blanchard,	Greensboro,	E. E.
Cecil DeWitt Brothers,	Conetoe,	C. E.
Thomas Kincaid Bruner, Jr.,	Raleigh,	Tex.
Earle J. Carpenter,	Gaffney, S. C.,	Chem.
Thorne McKinzie Clark,	Raleigh,	C. E.
Walter Miller Cowles,	Charlotte,	M. E.
John Bennett Craven,	Charlotte,	M. E.
Joseph Frank Davidson,	Statesville,	E. E.
William Samuel Dean,	Oxford,	Tex.
Kenneth Craig Denny,	Cromartie,	E. E.
Carlton O'Neal Dougherty,	North, S. C.,	Tex.
Louis C. Drake,	McAdensville,	Tex.
Fred Atha Duke,	Raleigh,	C. E.
William Hunt Eaton,	Cleveland,	Agr.
Ralph Ringgold Faison,	Goldsboro,	Agr.
Frank Lindsay Foard,	Winston-Salem,	Agr.
Roscoe Loomis Fox,	Waynesboro,	Tex.
Lewis Price Gattis,	Raleigh,	C. E.

Name.	*Post-office.*	*Course.*
Albert Sidney Johnston Goss,	Union, S. C.,	C. E.
Charlie Pool Gray,	Buxton,	C. E.
Andrew Heartsfield Green,	Raleigh,	Agr.
Cecil Linwood Griffin.	Manteo,	C. E.
William Roy Hampton,	Plymouth,	Chem.
John William Harrelson,	Lawndale,	M. E.
George Harrison,	Enfield,	C. E.
Edmond Burke Haywood,	Raleigh,	E. E.
Thomas Frederic Haywood,	Trenton,	C. E.
Leonard Henderson,	Salisbury,	M. E.
Martin Robert Herring,	Winton,	E. E.
Bascombe Britt Higgins,	Leicester, R. 2,	Agr.
Daniel Harvey Hill, Jr.,	West Raleigh,	E. E.
Wayne Arington Hornady,	Burlington,	Agr.
Ralph Cleveland Hunter,	East Laporte,	Agr.
Samuel Ross Ireland,	Faison, R. 2,	Agr.
Donald Barrett Iseley,	Burlington,	C. E.
William Fladger R. Johnson,	Marion, S. C.,	C. E.
Frederick John Jones,	New Bern,	C. E.
Ralph Long,	Graham,	Agr.
Samuel Macon Mallison,	Washington,	C. E.
William Roydan Marshall,	Rocky Mount,	M. E.
Ralph Cecil Mason,	Edenton,	Agr.
Arthur Ballard Massey,	Philadelphia, Pa.,	Agr.
Charles Clarence Mayo,	Washington,	Agr.
Walker Morehead Millner,	Leaksville,	Tex.
Benjamin Franklin Montague,	Winston-Salem,	C. E.
Owen Moore,	Asheville,	E. E.
Harry Mott,	Mooresville,	Agr.
Henry Rothrock Nooe,	Pittsboro,	C. E.
James Francis Oliver,	Mt. Olive,	C. E.
Samuel Loftin Oliver,	Mt. Olive, R. 2,	E. E.
Julius Monroe Parker,	Hunting Creek,	C. E.
John Gilbert Paschal,	Goldston,	E. E.
William Murdock Peck,	Wilmington,	C. E.
Isham Roland Peirce,	Warsaw,	Agr.
Peter Penick Pierce,	Pelham,	E. E.
Paul Miller Pitts,	Concord,	M. E.
John Alexander Porter, Jr.,	Biltmore,	C. E.

Name.	*Post-office.*	*Course.*
John Moir Price,	Leaksville,	M. E.
Robert Richard Reinhardt,	Stanley Creek,	Agr.
Alfred Pratte Riggs,	Wanchese,	C. E.
Thomas Wood Robbins,	Durham,	E. E.
Joseph Henry Robertson,	Burlington,	E. E.
William Barrett Rose,	Wadesboro,	E. E.
James Olin Sadler,	Charlotte, R. 12,	C. E.
Francis Webber Sherwood,	Raleigh,	Chem.
Robert Arnold Shope,	Weaverville,	C. E.
Louis Harrell Siau,	Georgetown, S. C.,	Agr.
George Gray Simpson,	Richmond, Va.,	Tex.
William Neville Sloan,	Franklin,	C. E.
Hugh Stuart Steele,	Yadkin Valley,	C. E.
Samuel Fatio Stephens,	Norfolk, Va.,	C. E.
Henry Newbold Sumner,	Hertford,	C. E.
John Dick Thomason,	Hickory,	M. E.
James Edwin Toomer,	Wilmington,	Chem.
Edgar Raymond Underwood,	Huntersville,	C. E.
Thomas Ruffin Warren,	Durham,	Tex.
John Piper Watters,	Charlotte,	E. E.
William Watters,	Wilmington,	C. E.
Joseph Slaughter Whitehurst,	Elizabeth City,	C. E.
Oliver Gaines Whitley,	Albemarle,	C. E.
Robert Beverly Whittington,	Asheville,	E. E.
Paul Adams Witherspoon,	Mooresville,	C. E.

FRESHMAN CLASS.

Hal Clifford Albright,	Charlotte,	Min.
James Cicero Albright,	Rock Creek,	M. E.
Alfred Armfield,	Statesville,	Tex.
Charles Gray Armfield,	Statesville,	C. E.
Robert Atkinson,	Lenoir,	E. E.
Robert Kenneth Babington,	Gastonia,	E. E.
Thomas Roper Baldwin, Jr.,	Mt. Gilead,	Tex.
Andrew Jackson Beall,	Charlotte,	E. E.
John Burgess Berrier,	Lexington, R. 3,	E. E.
Fred McColough Black,	Mooresville,	M. E.
Robert Daniel Bland,	Currie,	E. E.
Thomas Sawyer Bond,	Windsor,	C. E.

Name.	*Post-office.*	*Course.*
George Washington Braddy,	Westbrook,	E. E.
Carl Ray Bradley,	Old Fort,	E. E.
James Sexton Bray,	Elkin,	Agr.
Elton Elroy Buck,	Hampton, Va.,	C. E.
Von Porter Byrum,	Charlotte, R. 3,	M. E.
Henry Roy Cates,	Swepsonville,	Agr.
Joseph Blount Cherry,	Windsor,	E. E.
Herbert George Coughenour,	Scotland Neck,	E. E.
John Monroe Council,	Wananish,	E. E.
Robert Henry Cowan,	Durham,	Tex.
Jaquelin Daniel Crosswell,	Fayetteville,	E. E.
William Henry Crow,	Monroe,	E. E.
William Earle Davis,	Hiddenite,	E. E.
Thomas Theodore Dawson,	Grifton,	C. E.
Edwin Gray Deans,	Wilson,	C. E.
Benjamin Franklin Duncan, Jr.,	Columbia,	C. E.
Robert Orlando Edwards,	Fremont,	C. E.
William Herbert Ellis,	Wilson,	Agr.
Risden Bennett Gaddy,	Monroe,	E. E.
Levi Conway Gardner,	Grifton,	C. E.
Ransom Eaton Gill,	Raleigh,	C. E.
William Thomas Grimes, Jr.,	Hamilton,	Chem.
Walter Pirson Hardee,	Stem,	Agr.
Thomas Devin Harris,	Oxford,	C. E.
Lawrence Jeffries Hayes,	Burlington,	C. E.
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Lyda Alexander Higgins,	Leicester,	Agr.
George Washington Hill,	Trinity,	Agr.
Clinton White Hinshaw,	Winston-Salem,	M. E.
Louie Lee Hood,	Asheville,	C. E.
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Fred Parker Johnson,	Raeford,	E. E.
Claude Hunter Jones,	Reidsville,	M. E.
Robert Frank Jones,	Washington,	C. E.
Gilmer Andrew Jones,	Franklin,	C. E.
Clyde Raymond Jordan,	Gulf,	E. E.
Linwood A. Joyner,	Jackson,	E. E.
Mark Clinton Lasitter,	Snow Hill,	C. E.
Edward Hugh Lee, Jr.,	Raleigh,	C. E.

Name.	*Post-office.*	*Course.*
Ashe Lockhart,	Wadesboro,	Agr.
Ulphian Carr Loftin,	West Raleigh,	Agr.
Frank Neeley McDowell,	Charlotte,	Agr.
Lennox Polk McLendon,	Wadesboro,	Agr.
Samuel Huxley McNeely,	Waxhaw,	E. E.
William Leake Manning,	Henderson,	E. E.
Melvyn Solomon Mayes,	Stem,	M. E.
George Folger Meares,	Wilmington,	M. E.
Leon Davis Moody,	East Laporte,	M. E.
Eugene Boise Moore,	Morven,	E. E.
Robert Lee Morgan,	Wilson,	M. E.
Herbert Pennell Moseley,	Kinston,	C. E.
Louis Albert Nooe,	Pittsboro,	Tex.
Raymond Otterburg,	Charlotte,	M. E.
Joe Baxter Parks,	Concord,	E. E.
William Casper Pennington,	Thomasville,	M. E.
William Ransom Phillips,	Dunn,	E. E.
William Roy Plott,	Plott,	E. E.
Frank Townley Redfearn,	Monroe,	E. E.
Jerome Lyda Reeves,	Leicester,	Tex.
Archie Knight Robertson,	Rowland,	Agr.
Jay Frederick Robinson,	Hampton, Va.,	C. E.
Carl Collins Sadler,	Charlotte,	C. E.
John Waldorf Sexton,	Salem Church,	C. E.
Edwin Comer Smith,	Guilford,	E. E.
Edwin Harrison Smith,	Weldon,	Chem.
John Francis Speight,	Whitakers,	C. E.
Samuel Adison Spencer,	Ashboro,	M. E.
St. Julian Lachicotte Springs,	Georgetown, S. C.,	Agr.
Charles Burt Stainback,	Henderson,	E. E.
William Clark Styron,	Washington,	M. E.
Thomas Bryan Summerlin,	Mt. Olive,	E. E.
Warren Hastings Summers,	Davidson,	C. E.
Lloyd Hurst Swindell,	Raleigh,	E. E.
Walter Clyburn Taylor,	Rhodhiss,	Tex.
Thomas Hampton Thompson,	Thomasville,	M. E.
William Putnam Thompson,	Falls,	M. E.
Isaac Norris Tull,	Kinston,	E. E.
Robert Ervin Tuttle,	Lenoir,	C. E.
Charles Emmette Walton,	Hamilton, Ga.,	E. E.

Name.	*Post-office.*	*Course.*
Howard W. Welles, Jr.,	Poughkeepsie, N. Y.,	E. E.
David Rand Wellons,	Smithfield,	C. E.
Edgar Guy Wilson,	Raleigh,	E. E.
John Stafford Wilson,	Charlotte,	Tex.
Edward Leigh Winslow,	Winfall,	C. E.
Daniel Cutts Young,	Cary,	M. E.

SHORT COURSE.

FIRST YEAR.

Fred Hargrave Allen,	Wadesboro,	M. A.
Plott Boyd,	Plott,	M. A.
William Councill Boyden,	Boone,	M. A.
James Thomas Brasington,	Wadesboro,	M. A.
Samuel Ashe Brown,	Davidson,	Tex.
Wm. Sumner Riddick Burwell,	Kittrell,	Tex.
James Walter Call,	Mocksville,	M. A.
Henry Caleb Clay,	Hickory,	M. A.
Jesse Frank Clement,	Mocksville,	M. A.
Frederick Woodard Connor,	Wilson,	Agr.
Charles Lee Cruse,	Spencer,	Agr.
Charles Brittian Drake,	McAdensville,	App. E.
Clarence Oscar Eidson,	Asheville,	App. E.
Archer Pleasant Farmer,	Fuquay Springs,	App. E.
Junius Benton Fuquay,	Jonesboro,	M. A.
Joseph George Godard,	Williamston,	M. A.
James Miller Gray,	Cullasaja,	Agr.
Thomas Jefferson Hardison,	Morven,	Agr.
Marmaduke James Hawkins,	Ridgeway,	M. A.
James Hilliard,	High Point,	App. E.
Robert Lawford Holder,	Durham,	M. E.
James Baker Huske, Jr.,	Fayetteville,	Agr.
Zollie Oscar Ingram,	Little Mills,	Agr.
Robert Jackson Jordan,	Winston-Salem,	M. A.
Jones Russell Klapp,	Virgilina, Va.,	App. E.
Wingate Agusta Lambertson,	Rich Square,	E. E.
George Linn,	Charleston, W. Va.,	Agr.
Thomas Seigle Linton,	Raleigh,	E. E.
Joe Bennett McCoy,	Huntersville,	Agr.

Name.	*Post-office.*	*Course.*
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Elmo Michael,	Cid,	App. E.
Thomas Lapsley Morrow,	Saxapahaw,	Agr.
Robert Andrew Patton,	Franklin,	Agr.
Edmund Lilly Pemberton,	Fayetteville,	M. A.
Robert Graham Person,	Laurel,	M. A.
Hillary Dowdy Potter,	Cash Corner,	M. A.
Thomas Ben Pritchard,	Chapel Hill,	Agr.
Joe Henry Rhyne,	Charlotte, R. 5,	Agr.
Charles Edward Rosemond,	Hillsboro,	M. E.
Carl Augustus Rudisill,	Cherryville,	Tex.
DeBerniere Hooper Sanders,	Smithfield,	M. A.
Orus Seagroves,	Method,	Agr.
Ira Short,	Boardman,	M. A.
Carl Siler Slagle,	Franklin,	Agr.
Edmund Spencer Smith,	Autryville,	Agr.
John Andrew Snyder,	Rocky Mount,	Agr.
Milton D. Steagall,	McFarlan,	Agr.
Cornelius Harnett Stallings,	Spring Hope,	App. E.
James Richard Sugg,	Wilson,	E. E.
Fred Teague,	Whittier,	M. A.
Claude Wood Thompson,	Elmwood,	Agr.
Franklin Wood Thorp,	Rocky Mount,	Agr.
Joseph Tyson Ward,	Wilson,	Agr.
Fred Barnett Wheeler,	Archdale,	M. A.
Joel Williams,	Fayetteville,	Agr.
Sion D. Williams,	Raleigh,	Agr.

SHORT COURSE.

SECOND YEAR.

Everett Stuart Durham,	Snow Camp,	Agr.
Adam Duncan Herren,	Waynesville,	M. A.
William Moore Hollingsworth,	Mt. Airy,	App. E.
Walter Merritt Kenly,	Lake Waccamaw,	Agr.
William Worth Morrison,	Morven,	Agr.
Walter Newton Shine,	Kenansville,	M. A.
Dugald Stewart, Jr.,	Laurinburg,	Agr.
Azariah Graves Thompson,	Leasburg,	Agr.
Lawrence James Welch,	Carlisle, S. C.,	M. A.

IRREGULAR STUDENTS.

Name.	*Post-office.*	*Course.*
Clinton Cress Allison,	Concord,	Agr.
Wm. Herbert Doughty Banck,	Wilmington,	C. E.
James Lamar Beall,	Linwood,	Agr.
John Benjamin Bray,	Sligo,	C. E.
Da Costa Moore Clarke,	Old Fort,	E. E.
Kinchen Clyde Council,	Wananish,	M. E.
Hilsmon Clellan Davis,	Youngsville,	Agr.
Henry Roe Field,	Memphis, Tenn.,	E. E.
Robert Lee Foy,	Scotts Hill,	C. E.
Fred Lardner Gibbon,	Charlotte,	Agr.
Glenn Irving Gibbs,	Asheville,	Agr.
Francis Marion Gilbert,	Grifton,	M. E.
Charles Walter Hackett,	North Wilkesboro,	C. E.
Gordon Harris,	Raleigh,	E. E.
Frank Hawks,	Kinston,	M. E.
Ernest Albert Haynes,	Raleigh,	C. E.
James Hooper Henly,	Sanford,	Agr.
Murphy McNeill Holloway,	Cardenas,	M. E.
Jesse Glenn Holt,	Greensboro,	M. A.
Wilbon Oisa Huntley,	Wadesboro,	Agr.
Edgar Winfield Iseley,	Gibsonville,	Agr.
John William Ivey,	La Grange,	M. A.
Edward Turner Jordan,	Siler City,	E. E.
Walter Merritt Kenly,	Wilmington,	Agr.
James Frank La Roque,	Kinston,	C. E.
James Edward Latham,	Washington,	Agr.
George Washington Little,	Wadesboro,	M. A.
John Henry Little,	Pinetops,	E. E.
James Newton Lowrance,	Mooresville,	Agr.
Larry Leonidas McLendon,	Wadesboro,	Agr.
Claude Lenoir Mast,	Valle Cruces,	Agr.
George Lewis Miller,	Laurel Springs,	M. A.
William Flaud Morris,	Ashboro,	M. E.
Robert Livingston Murphy,	Morganton,	M. E.
John Thomas O'Berry,	Dudley,	Agr.
Louis Smith Osburn,	Sebree, Ky.,	Agr.
William Jesse Pickett,	Kenansville,	Agr.
James Bruce Price,	Leaksville,	E. E.

Name.	*Post-office.*	*Course.*
Jesse Lindsay Primrose,	Raleigh,	Tex.
John William Shelburn,	Greenville,	Chem.
Cecil Ernest Spruill,	Creswell,	E. E.
Alexander Stewart,	Maxton,	Agr.
Victor Van Sykes,	Efland,	M. E.
Malvern Hill Terrell,	Old Fort,	E. E.
Frank Martin Thompson,	Raleigh,	Tex.
Adolphus Mangum Webb,	Winston-Salem,	M. E.
Robert Marshall Whitley,	Charlotte,	Agr.
John Spicer Wilson,	Winston,	M. E.
David Roy Winstead,	Wilson,	Tex.

SPECIAL STUDENTS.

John Camillus App,	Charleston, W. Va.,	Chem.
Robert James Edens,	Holly Ridge,	M. A.
Augustus Alexander McLean,	Gastonia,	E. E.
Ivan Charles Moore,	Raleigh,	Tex.
Lawrence Alfred Thompson,	Haw River,	Tex.

WINTER COURSES.

DeWitt Bradford,	Huntersville,	Dairying.
Price Caldwell,	Huntersville,	Dairying.
Paul Coble,	Greensboro,	Dairying.
Hufham Watson Early,	Aulander,	Dairying.
William Henry Frothingham,	Brooklyn, N. Y.,	Dairying.
Waite Carlisle Hamrick,	Shelby,	Dairying.
Ralph M. Hutchison,	Charlotte,	Dairying.
William Wallace Lowrance,	Mooresville,	Dairying.
Joe Carroll Mast,	Valle Cruces,	Dairying.
Claude Bernard McBrayer,	Shelby,	Dairying.
Andrew Wesley Oldham,	West Durham,	Textile.
Manly Pearce,	Edenton,	Dairying.
John Turner Walker,	Concord,	Dairying.

SEVENTEENTH ANNUAL COMMENCEMENT.

MAY 30, 1906.

Degrees Conferred.

BACHELORS OF AGRICULTURE.

James Claudius Beavers,
Mark Hopkins Chesbro,
Alexander Doane Cromartie,
William Carlyle Etheridge,
Shirly Watson Foster,
Horace Smith McLendon,
Joseph Graham Morrison,
Charles Franklin Niven,
Lola Alexander Niven,
Lewis Milton Oden,
Freddie Jackson Talton,
Robert Peel Uzzell,
Lewis Tayloe Winston.

BACHELORS OF ENGINEERING.

In Civil Engineering.

Durant Stewart Abernethy,
George Page Asbury,
Kenneth Leon Black,
William Andrews Buys,
Samuel Herbert Clarke,
Latta Vanderion Edwards,
James Allen Higgs, Jr.,
Joe Poindexter Lovill,
Thompson Mayo Lykes,
Raymond Maxwell,
Lacy Moore,
Angelo Bettlena Piver,
William Sidney Tomlinson,
Reid Tull.

In Electrical Engineering.

Connor Calhoun Clardy,
James Beckett Ewart,
Horace Lester Hamilton,
Clarence Wilson Hewlett,
Jesse Clarence Myrick,
Richard Henry Tillman,
Jackson Corpening Tuttle.

In Mechanical Engineering.

John Washington Clark,
Wiley Theodore Clay,
Weldon Thompson Ellis,
John Frederick Hanselman,
Thomas Jefferson Ogburn,
Lillian Lee Vaughan.

In Textile Industry.

GEORGE GILDEROY ALLEN,
ALBERT EDWARD ESCOTT,
DURANT WAITE ROBERTSON,
JAMES HARLEIGH WILLIAMS.

BACHELORS OF SCIENCE.

In Industrial Chemistry.

NEEDHAM ERIC BELL,
JAMES DUNCAN CLARKE, JR.,
DUNCAN ARCHIBALD COX,
ARTHUR WYNNS GREGORY,
WILLIAM GRAHAM KNOX,
CLYDE ESTER PARKER,
SAMUEL OSCAR PERKINS,
WILLIAM CRAWFORD PIVER,
PETER VALAER, JR.

CIVIL ENGINEER.

CARROLL LAMB MANN, B.S.

ANNOUNCEMENT OF HONORS.

HONORS IN SCHOLARSHIP FOR 1905-6.

Post-Graduate.

J. C. TEMPLE.

Senior Class.

G. P. ASBURY,
A. E. ESCOTT,
C. W. HEWLETT,
J. P. LOVILL,
R. MAXWELL,
L. L. VAUGHAN.

Junior Class.

S. ELDRIDGE,
C. L. GARNER,
L. R. GILBERT,
H. K. MCCONNELL,
W. B. TRUITT.

Sophomore Class.

F. H. BROWN,
R. R. EAGLE,
P. L. GAINEY,
D. Y. HAGAN,
H. W. KUEFFNER,
E. E. SMITH,
J. L. VON GLAHN.

Freshman Class.

J. W. HARRELSON,
R. C. MASON,
W. B. ROSE.

Second-year Short-course Class.

K. C. COUNCIL.

HONORS FOR PUNCTUALITY.

C. L. GARNER, '07,
J. G. HOLT, Short Course.

FRESHMAN PRIZES FOR AGRICULTURAL LABOR.

First Prize, $10.00, - C. C. ALLISON,
Second Prize, $5.00, - J. A. AREY.

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AGRICULTURAL AND MECHANICAL COLLEGE RECORD.

VOL. 6. No. 4.

MARCH, 1908.

WEST RALEIGH, N. C.

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REGISTRAR, A. AND M. COLLEGE,
West Raleigh, N. C.

THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1907-1908.

RALEIGH:
E. M. UZZELL & CO., STATE PRINTERS AND BINDERS.
1908.

CALENDAR.

1908.

JANUARY.

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COLLEGE CALENDAR.

1908.

Thursday,	July	9,	Entrance examination at each county courthouse, 10 A. M.
Wednesday,	September	2,	Entrance examination at the College, 9 A. M.
Thursday,	September	3,	First Term begins; Registration Day.
Thursday,	November	26,	Thanksgiving Day.
Tuesday,	December	22,	First Term ends.

1909.

Tuesday,	January	5,	Second Term begins; Registration Day.
Saturday,	March	13,	Second Term ends.
Monday,	March	15,	Third Term begins; Registration Day.
Sunday,	May	23,	Baccalaureate Sermon.
Monday,	May	24,	Alumni Day.
Tuesday,	May	25,	Annual Oration.
Wednesday,	May	26,	Commencement Day.

BOARD OF TRUSTEES.

Name.	*Post-office.*	*Term Expires.*
R. H. Ricks	Rocky Mount	May 1, 1909.
W. D. Turner	Statesville	May 1, 1909.
O. Max Gardner	Shelby	May 1, 1909.
Locke Craig	Asheville	May 1, 1909.
C. W. Gold	Raleigh	May 1, 1911.
E. M. Koonce	Jacksonville	May 1, 1911.
T. W. Blount	Roper	May 1, 1911.
D. A. Tompkins	Charlotte	May 1, 1911.
J. T. Ellington	Smithfield	May 1, 1913.
W. E. Daniel	Weldon	May 1, 1913.
W. H. Ragan	High Point	May 1, 1913.
W. B. Cooper	Wilmington	May 1, 1913.
M. B. Stickley	Concord	May 1, 1915.
T. T. Ballenger	Tryon	May 1, 1915.
N. B. Broughton	Raleigh	May 1, 1915.
O. L. Clark	Clarkton	May 1, 1915.

FACULTY.

GEORGE TAYLOE WINSTON, A.M., LL.D., President, and Professor of Political Economy.

DANIEL HARVEY HILL, A.M., Lit.D., Professor of English, and Vice-President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.

CHARLES WALTER THOMAS, M.E., Professor of Mechanical Engineering.

ROBERT E. LEE YATES, A.M., Professor of Mathematics.

THOMAS NELSON, Professor of Textile Industry.

CHARLES M. CONNER, B.S.A., B.S., Professor of Agriculture.

JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.

WILLIAM JAMES MOORE, M.E., Professor of Electrical Engineering and Physics.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Associate Professor of Veterinary Science and Physiology.

JOHN MICHELS, B.S.A., M.S., Associate Professor of Dairying and Animal Husbandry.

FRANK C. REIMER, M.S., Assistant Professor of Horticulture.

BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

ROBERT SETH CURTIS, B.S.A., Assistant Professor of Animal Husbandry.

CHARLES BENJAMIN PARK, Instructor in Machine Shop and Assistant in Power Plant.

WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Instructor in Chemistry.

CARROLL LAMB MANN, B.S., C.E., Instructor in Civil Engineering.

THOMAS SIMEON LANG, B.S., C.E., Instructor in Civil Engineering.

GEORGE SUMMEY, JR., Ph.D., Instructor in English.

WINFRED MORSE ADAMS, B.S., Instructor in Electrical Engineering.
JOHN HOUSTON SHUFORD, B.S., Instructor in Dyeing.
CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.
ALFRED HENRY THIESSEN, B.S., Section Director United States Weather Bureau, Instructor in Meteorology.
JOHN STRAUCHON JEFFREY, Instructor in Poultry Husbandry.
ABRAHAM RUDY, A.M., Pd.D., Instructor in Modern Languages.
RALPH INGRAM SMITH, B.S., Instructor in Zoology and Entomology.
WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.
JOHN ALSEY PARK, B.E., Instructor in Mathematics.
MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.
LILLIAN LEE VAUGHAN, B.E., Instructor in Drawing and Mechanics.
CARL PHILIP BONN, B.A., Instructor in English.
CLARENCE WILSON HEWLETT, B.S., Instructor in Physics.
VANCE SYKES, B.E., Instructor in Mathematics and Civil Engineering.
WELDON THOMPSON ELLIS, B.E., Instructor in Machine Design and Steam Laboratory.
LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D., Instructor in Chemistry.
HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.
JAMES CLARENCE TEMPLE, B.Agr., Instructor in Bacteriology.
ARTHUR JOHN WILSON, B.S., Instructor in Chemistry.
FRED. BARNET WHEELER, Instructor in Forge.
THOMAS DOTTERER EASON, B.S., Laboratory Assistant in Botany.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar.
ARTHUR FINN BOWEN, Bursar.
BENJAMIN SMITH SKINNER, Farm Superintendent.
JAMES OLIVER LOFTIN, Steward.
Miss ELSIE LANIER STOCKARD, Librarian.
Mrs. DAISY LEWIS, Matron.
Miss KATHARINE FORT, Stenographer.
HENRY McKEE TUCKER, M.D., Physician.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION.

GEORGE TAYLOE WINSTON, A.M., LL.D., President.
CHARLES BURGESS WILLIAMS, M.S., Director and Agronomist.
WILLIAM ALPHONSO WITHERS, A.M., Chemist.
FRANK LINCOLN STEVENS, Ph.D., Vegetable Pathologist.
CHARLES M. CONNER, B.S.A., B.S., Agronomist.
JOHN STRAUCHON JEFFREY, Poultryman.
FRANK CHARLES REIMER, M.S., Horticulturist.
ROBERT SETH CURTIS, B.S.A., Animal Husbandman.
JOHN MICHELS, M.S.A., Dairy Husbandman.
RALPH INGRAM SMITH, B.S., Entomologist.
WILLIAM KERR, B.Agr., Assistant in Field Experiments.
WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Assistant Chemist.
JOHN GALENTINE HALL, A.M., Assistant in Vegetable Pathology.
WILLIAM CARLYLE ETHERIDGE, B.Agr., Assistant in Farm Crops.
JAMES CLARENCE TEMPLE, B.Agr., Assistant Chemist and Assistant Bacteriologist.
ARTHUR FINN BOWEN, Bursar.
Miss MARY ELIZABETH DEW, Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

FIRST LIEUTENANT JOHN S. E. YOUNG, U. S. Army.

Cadet Major.

R. R. EAGLE.

Battalion Staff.

J. L. VON GLAHN, Captain and Adjutant.
S. M. GIBBS, Captain and Quartermaster.

Non-Commissioned Staff.

H. N. SUMNER, Sergeant-Major.
W. F. MORRIS, Color Sergeant.

Band.

J. F. ZIGLAR, Captain.
R. R. FAISON, Drum-Major.
T. F. HAYWOOD, First Sergeant.
J. E. TOOMER, Sergeant.
I. N. TULL, Corporal.
J. S. BRAY, Corporal.

Company A.

D. LINDSAY, Captain.
T. M. POYNER, First Lieutenant.
W. B. BURGESS, Second Lieutenant.
G. HARRISON, First Sergeant.
W. M. MILNER, Sergeant.
J. B. CRAVEN, Sergeant.
A. H. GREEN, Sergeant.
J. S. WHITEHURST, Sergeant.
J. C. ALBRIGHT, Corporal.
C. G. ARMFIELD, Corporal.
W. P. HARDEE, Corporal.
C. W. HINSHAW, Corporal.
W. L. MANNING, Corporal.
H. P. MOSELEY, Corporal.
M. S. MAYES, Corporal.

Company B.

A. G. BOYNTON, Captain.
H. A. POWELL, First Lieutenant.
L. L. PITTMAN, Second Lieutenant.
J. W. HARRELSON, First Sergeant.
T. M. CLARK, Sergeant.
J. M. PARKER, Sergeant.
H. S. STEELE, Sergeant.
G. G. SIMPSON, Sergeant.
D. C. YOUNG, Corporal.
J. F. ROBINSON, Corporal.
T. D. HARRIS, Corporal.
T. B. SUMMERLIN, Corporal.
E. E. BUCK, Corporal.

Company C.

D. Y. HAGAN, Captain.
F. H. BROWN, First Lieutenant.
J. C. WILLIAMS, Second Lieutenant.
C. P. GRAY, First Sergeant.
J. G. PASCHAL, Sergeant.
S. F. STEPHENS, Sergeant.
W. A. HORNADAY, Sergeant.
J. E. LATHAM, Sergeant.

W. N. SLOAN, Sergeant.
R. L. HOLDER, Corporal.
L. L. HOOD, Corporal.
E. H. LEE, Jr., Corporal.
F. N. McDOWELL, Corporal.
L. P. McLENDON, Corporal.
J. L. SPRINGS, Corporal.
R. T. BOYLAN, Corporal.

Company D.

E. E. SMITH, Captain.
M. L. EARGLE, First Lieutenant.
P. L. GAINEY, Second Lieutenant.
R. A. SHOPE, First Sergeant.
B. F. MONTAGUE, Sergeant.
F. A. DUKE, Sergeant.
S. M. MALLISON, Sergeant.
M. H. TERRELL, Sergeant.
L. D. MOODY, Corporal.
J. B. PARKS, Corporal.
H. C. CLAY, Corporal.
S. H. McNEELY, Corporal.
V. P. BYRUM, Corporal.

Company E.

C. T. MARSH, Captain.
B. T. FERGUSON, First Lieutenant.
H. W. KUEFFNER, Second Lieutenant.
J. M. PRICE, First Sergeant.
W. S. DEAN, Sergeant.
F. L. FOARD, Sergeant.
F. J. JONES, Sergeant.
J. R. SUGG, Corporal.
W. R. PHILLIPS, Corporal.
J. W. IVEY, Corporal.
R. L. MORGAN, Corporal.
C. R. JORDAN, Corporal.
J. M. COUNCIL, Corporal.

Note.—On October 16, 1907, the Battalion held a competitive drill on the Fair Grounds track, during Fair Week. Company A was selected as the best drilled organization and awarded the College pennant.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890, and the "Nelson Act" of 1907.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from twelve deep wells. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and eighty-five acres of land and sixteen buildings, and its teaching force consists of forty-two specialists. Its laboratories, drawing-rooms, and work-shops are well equipped. Its library contains five thousand and twenty-four volumes, and its reading-room is well supplied with literary and technical journals and newspapers.

BUILDINGS.

The Main Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation-rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall.—In honor of the late R. Stanhope Pullen, the greatest benefactor of the College, the large new building recently finished has been called Pullen Hall. The basement of this building is used as a dining-room and seats five hundred students. The first story is used for library, reading-room, and lecture-rooms. The second story serves as the College auditorium. This room is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is two hundred and four by seventy-four feet. The lower or basement floor contains the class-rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making, stock judging, farm butchering, and cold-storage accommodations for the products.

The second floor contains the offices of the department, class-rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery.

On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class-rooms and large, well-lighted laboratories.

The building affords the best accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

Foundry.—The old boiler house has been fitted up for foundry purposes. It contains a Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting; benches and hand tools for moulding in the course of exercises, as well as for any repair work for the College.

The Barn is a frame building of modern design and carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

The New Power Plant furnishes heat, light, and power for all the buildings. The boiler plant consists of two 75-horse-power Babcock and Wilcox Company and two 100-horse-power Atlas Water-Tube Boilers, with a working steam pressure of 150 pounds. The Engine Plant consists of a 100-horse-power Skinner Engine and Crocker-Wheeler Generator attached; a 100 K. W. De Laval Turbine Generator set with self-exciter; a 10 K. W. steam-driven Exciter; Set, Steam, and Vacuum Pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren Webster system.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal

donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the new Agricultural Building and the laboratories are in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week or month.

Students cannot properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette-smoking, drinking, gambling, card-playing, visiting pool-rooms, loafing on the streets, and such like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; his failures to perform duty and his infractions of the rules. When this record shows that the young man is not in College for the purpose of getting an education, and is not using his opportunities properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed.

When absent from any duty a student should immediately file with the Commandant, Registrar, or Instructor concerned a statement of the reason for his absence. When no statement is filed it is presumed that every absence from duty is intentional and without excuse. The rules of the College are intended solely to promote manliness; to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the students in the Freshman Class who earn the largest and the next largest amounts of money by labor on the College farm.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

Mr. Frank E. Lowenstein, of Atlanta, Ga., a former student of the College, has donated a medal valued at $25 to be awarded to the member of the Sophomore Class making the best grade in Chemistry.

To the Junior Mechanical Student who has made the most progress in Mechanical Drawing the Mechanical Department gives a set of high-grade drawing instruments.

DISCIPLINE.

The discipline is intended to secure studious habits, with punctuality, system, and order in the performance of all duties. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform school, and it will not retain young men who are vicious, idle, or incompetent.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization of the students, and is entirely under student management. A general secretary is employed by the association and devotes his entire time to the work. The members of the Faculty are interested in the work and give assistance, both financially and otherwise. Any student who is a member of an evangelical church may become an active member. Any student of good moral character or who desires to improve his moral life may become an associate member.

Two regular meetings of the association are held each week, on Sunday and Wednesday evenings, immediately after supper. These meetings are for the training of men to be leaders in religious work after leaving College.

The greatest work of the association is its Bible Study department. About one hundred men are enrolled in these classes. Six or ten men meet in each class and study together. The leaders of these classes are trained by members of the Faculty, and the entire work is under the supervision of the Bible Study Committee and the General Secretary. Every student, whether a member of the association or not, should take advantage of this opportunity and join one of these groups.

The following courses are offered:

Course I.—"Study in Old Testament Characters." A new course, dealing with the great men of the Old Testament, and serving as an introduction to the other courses.

Course II.—"Studies in the Life of Christ." A course intended to give the student an intelligent and sympathetic view of the life and character of Jesus Christ.

Course III.—"Studies in the Acts and Epistles." This course introduces men to the life and work of the early Christian Church, with especial emphasis on the life of Paul.

Course IV.—"The Teachings of Jesus and His Apostles." A scientific and systematic presentation of Christ's own view of His own life and its relation to men.

In addition to the above courses on Bible Study the following courses on missions are offered.

1. The New Era in the Philippines.
2. Effective Workers in Needy Fields.
3. The Call of the Home Land.
4. China and Her Problems.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practice in base-ball, foot-ball, track athletics, etc.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about five thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about seven thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific, and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations

and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every two weeks for the discussion of mechanical subjects.

The Berzelius Chemical Society meets weekly for the discussion of chemical subjects and for review of the current chemical literature, with which the College is well supplied.

The Merriman Society of Civil Engineering meets fortnightly for the purpose of reading and discussing papers of interest to civil engineers.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Glee Club is composed of about twenty young men, embracing the best musical talent of the College. It aims to give one concert each year, and afterwards to sing at various College entertainments and functions during the year.

The Alumni Association meets each year on Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the examination for entrance to the Freshman Class.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1908 is July 9th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Wednesday preceding the opening day. The examinations begin with English at 9 A. M., in Room 21, Main Building, followed by Mathematics at 11, and History at 2, in the same room. The date for 1908 is September 2d.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.
2. School teachers holding teachers' certificates.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Wednesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00.

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies is a matter largely to be determined by the parent.

The amount of such allowance should be kept within reasonable bounds. From $50.00 to $100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship, amount to from $275.00 to $325.00 for the entire session; or $230.00 to $280.00, if he has a scholarship.

The largest payment is made in September. A student on entering college should bring about $80.00 to meet his various payments for the first month, or $57.50, if he has a scholarship.

Students withdrawing from college within two weeks from date of entrance will be refunded all money paid by them to the College Bursar, except charges for board during the time here. Students withdrawing later than two weeks from date of entrance will be refunded no money except for board.

Board is $10.00 per month and is payable on the first day of each month from September to May inclusive; board for less time than one month is charged for at the rate of fifty cents a day or $3.00 per week.

The College Bursar is forbidden by the Trustees to give credit, and there is no deviation from this rule.

A more detailed statement of college fees is as follows:

Tuition	$ 45.00
Room rent, fuel and lights	30.00
Library, lecture, and physical culture	4.00
Incidental	5.00
Medical attention and medicine	6.00
Registration	2.00
Board	90.00
Shop and Drawing (material and use of tools) or Botany	2.00
Uniform and cap	14.30
Books and drawing instruments (estimate)	15.00
Laundry (estimated cost)	10.00

Drawing instruments are not required in the Freshman Class nor in the first-year Mechanic Arts course until the beginning of the second term. These instruments are furnished by the College at cost to all students requiring them. New students are advised not to purchase instruments before consulting the drawing instructors.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillow-cases, one pillow and two bed-spreads for single bed.

In addition to the fees enumerated above, students are required to pay fees as follows: A fee of $1 from students taking work in biological (except bacteriological), physical, or electrical laboratory, for material furnished. The deposits for the Chemistry Department are as follows: Inorganic laboratory, $3; analytical laboratory, $6; organic laboratory, $4; determinative mineralogy and assaying, $3. A deposit of $3 from Juniors and $4 from Seniors taking dyeing or bacteriology, to cover cost of breakages. A deposit of $5 from textile students, to cover cost of designing, supplies, tools, etc. Any unused portion of deposits to chemical, bacteriological or dyeing laboratories or to the Textile Department will be returned at the end of the year. If the deposit made is not sufficient to cover breakages and cost of material furnished, the students are required to make good the deficiency.

UNIFORM.

The College uniform must be worn while on military duty by all students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home, or purchased from the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There

is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be loaned to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, Alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $1,860.88.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, pillows, bed-spreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College physician. There is an abundant

supply of pure water from twelve deep wells. Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 1:30 o'clock P. M., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

COURSES OF INSTRUCTION.

The College offers the following Courses of Instruction:

I. **Four-year Courses:**

1st. **Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, and Industrial Chemistry).

3d. **Textile Industry** or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Agriculture is conferred upon a graduate in the four-year course in Agriculture. The degree of Bachelor of Science is conferred upon a graduate of the four-year course in Chemistry or Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. **Short Courses** of one year in Agriculture, and of two years in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending, and in Applied Electricity).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. **Winter Courses** in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting seven weeks. A one week's course in Agriculture, beginning with the opening of the Winter Term.

IV. **Normal Courses** for the training of teachers along industrial lines.

V. **Graduate Courses,** extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

AGRICULTURAL COURSES.

I. The Four-year Course in Agriculture.
Ia. The One-year Course in Agriculture.
Ib. The Seven Weeks' Course in Agriculture and Dairying.
Ic. The One Week's Course.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

The four-year course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The one-year course in Agriculture is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course.

The seven weeks' winter course in Agriculture is established to meet the needs of those who can spend only the winter at the College.

The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention.

The seven weeks' dairy course is a course in pratical butter-making in accordance with the most approved methods of the modern creamery.

The one week's course is described on page 32.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices upon yield and upon fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

I. Four-year Course in Agriculture, leading to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock, 10†	2	..	..
Dairying, 22	..	..	5
Fruit Culture, 42	5	..	..
Vegetable Gardening, 43	..	5	..
Botany, Elementary, 55	3	3	3
Animal Physiology, 33	2	4	4
Algebra, 84	5	2	..
Geometry, 85	..	3	5
English, 87	3	3	3
Military Drill, 99	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Crops, 3	..	2	2
Stock-judging, 11	2	..	..
Animal-breeding, 12	..	3	..
Herd Books, 13	..	1	..
Stock-feeding, 14	..	..	4
Poultry Husbandry, 29	..	3	3
Plant Diseases, 57	3	..	..
Systematic Botany, 56	..	..	3
Zoology, 64	4	..	..
Economic Entomology, 65	..	3	..
Inorganic Chemistry, 70	3	3	3
Inorganic Chemistry (laboratory), 71	2	2	2
Physics, 78	2	2	2
English, 88 and 90	3	3	3
Military Drill, 99	3	2	2

Junior Year.

Farm Equipment, 1	5	..	2
Soils, 2	..	3	..
Veterinary Anatomy, 34	4	..	..
Veterinary Medicine, 35	..	4	..
Veterinary Practice, 36	..	..	2
Landscape Gardening, 44	..	..	3
Bacteriology, 59	2	2	2
Agricultural Chemistry, 75	2	2	2
Drawing, 80	2	..	..
Wood-work, 82	..	2	2
Forge-work, 83	..	..	2
English and History, 91 and 95	2	2	2
Political Economy, 97	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	2	2
Modern Languages (elective), 92, 93, or 94	3	3	3

Senior Year.

SUBJECTS	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elect six periods of the following:			
English, 91 and 89	2	2	2
Business Law, 96	1	1	1
Modern Languages, 92, 93, or 94	3	3	3
Military Drill, 99	3	2	2
Elect thirteen periods of the following:			
Farm Management, 6	..	2	2
Special Crops, 4	5	3	..
Soil Physics, 5	..	..	3
Meteorology, 79	..	2	..
Advanced Live-stock Judging, 15	2	..	..
Live-stock Management (beef and dairy cattle), 16	..	2	..
Live-stock Management (horses, sheep and swine), 17	..	..	2
Dairy Bacteriology, 23	3	..	..
Cheese-making, 24	..	3	..
Experimental Dairying, 25	..	..	3
Poultry Husbandry, 30	..	..	3
Veterinary Medicine, 37	3	3	3
Advanced Pomology, 45	3	..	..
Forestry, 46	3	..	..
Floriculture, 47	..	3	..
Plant-breeding, 48	..	3	..
Horticultural Research, 49	..	..	6
Plant Diseases (advanced), 58	2	2	2
Bacteriology (advanced), 60	2	2	2
Systematic Entomology, 66	2	2	..
Geology, 69	2	2	2
Industrial Chemistry, 76	3	3	3
Organic Chemistry, 72	3	3	3
Analytical Chemistry (laboratory), 73 and 74	7	7	7
Advanced Political Economy, 98	2	2	2

One-year Course in Agriculture.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture (Elementary), 7	5	5	5
Animal Husbandry, 18	3	3	3
Dairying, 26	5	..	..
Diseases of Live-stock, 38	..	5	..
Poultry Husbandry, 29	..	3	3
Horticulture, 50	3	3	3
Diseases of Plants, 57	..	..	2
Botany, 55	3	..	..
Entomology, 68	..	..	3

SEVEN WEEKS' COURSE IN AGRICULTURE.

BEGINS JANUARY 11, 1909.

The Agricultural and Mechanical College offers, besides the four-year course and one-year course in Agriculture, **a seven weeks' course** and **a one week's course**, which are held during the winter months, when the farmers are not busy.

OBJECT.

These courses are designed to meet the needs of those who desire a knowledge of the **practical side of farming**, dairying, and poultry-raising, but who have not time to take the regular course in College. Our experience in the institute work of this State leads us to believe that the farmers are demanding more definite knowledge of their business. Since this can be acquired more easily and at less expense at an Agricultural College than by long experience on a farm, this course is offered.

Young men who have a desire to become farm managers can partially fit themselves for such work by taking this course. The College is called upon frequently to supply farm managers, which it is unable to do because the supply is not equal to the demand. There is a chance for any bright young man who has not money enough to equip a farm of his own to better his condition by fitting himself to accept a position as farm manager.

The demand for well-trained dairymen has also far exceeded the supply, and we have several vacancies now which we are unable to fill. The most imperative demand at present is not the filling of these places, but to find men who will receive proper training, return to the farm, and there engage in putting a stop to the importation of all kinds of dairy and farm products from other States.

Instruction in this course is given in such a manner that the students learn by actual contact and experience. Practical exercises in identifying varieties of farm crops, fruits, judging farm animals, butter-making, propagation of plants, and making and applying spraying mixtures are the means employed in illustrating and fixing in the minds of the students the instruction given in the class-room.

EQUIPMENT.

A new building devoted entirely to Agriculture has been completed. This building furnishes laboratories and class-rooms for all work in Agriculture. Equipment is being added constantly and the facilities for instruction will be much better this year than heretofore.

EXPENSES.

For the Seven Weeks' Course no tuition will be charged. There will be a small medical fee of $1.50. Board may be had in the mess-hall at $2.50 per week. Students who expect to room in dormitories should come provided with covers, sheets, pillow-cases, and towels.

Students will be required to wear white suits in the dairy laboratory. These suits can be had at $1 each.

Books, papers, etc., need not cost over two or three dollars.

The total expense of the course need not exceed $25 over and above railroad fare.

For the One Week's Course there will be no fees. The only expense will be that of board and lodging.

ADMISSION.

No examination is required for entrance to the Seven Weeks' Course. Any person over eighteen years of age may enter and enjoy the full privileges of the instruction. Since the greater part of the instruction is given in the form of lectures and laboratory work, the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects. Meetings of the students will be held from time to time for their mutual improvement.

The lecture and laboratory work begins on Monday, January 11th, and those who expect to take the course should come on Saturday before, so that they can have their board and room arranged for and be ready for work Monday morning.

OUTLINE OF COURSES.

The one week's course will be given preceding the seven weeks' course. Those who wish to go into the subjects more fully may do so in the seven weeks following.

ONE WEEK'S COURSE.

This course will be given from **January 4th to January 9th,** inclusive.

During this course only three subjects will be treated, namely:

Corn, Cotton, and Stock-raising.

In studying corn and cotton much time will be given to *seed selection. Corn judging* will be a feature of the work with corn. Attention will be given to the best methods of preparing the seed-bed, use of fertilizers and cultivation of the crop.

Lectures on stock-raising and practical work in judging cattle, horses, sheep, and swine will be given.

In this course pupils get practical instruction which they put into use after going home, and thereby increase the profits of their farms.

During the evenings of this week special lectures will be given on other farm subjects.

SEVEN WEEKS' COURSE.

GENERAL AGRICULTURE. *21 periods.*

Professor Conner.

Farm Crops.—Conditions of germination and growth of plants; seed selection; preparation and cultivation; studies of varieties of corn, cotton, and other crops; judging corn and cotton.

Soils.—Study of origin, formation, and distribution of soils, their physical properties as related to tillage and fertility; laboratory practice with different types of soils.

Farm Equipment.—Construction of farm buildings; the silo and its use; farm machinery; principles of draft, etc.

Fertilizers.—Kinds for different crops; home-mixing; time and method of application; value of stable manure and leguminous crops.

The department is well equipped with various makes of farm machinery for laboratory work. A large room in the Agricultural Building is used for this purpose.

AGRICULTURAL BOTANY. *21 periods.*

Professor Stevens.

This course consists of lectures and laboratory work. Such subjects as the following will be considered: Cross-breeding of plants; The flower and its structure; Pollen and its use; Improvement of plants by seed selection; The diseases of plants, how to recognize them and how to prevent them; Bacteria in the home and on the farm, their role as disease-producers in man, domestic animals and plants, their function in the dairy, in the making of butter and cheese, in the soil, in rendering plant-food available, and in leguminous roots as nitrogen-gatherers.

HORTICULTURE. *21 periods.*

Assistant Professor Reimer.

The course in Horticulture includes both lectures and laboratory work. It is made especially applicable to North Carolina conditions. The work includes the following subjects:

Fruit Culture.—This course includes a discussion of the fruit section of the State, and a discussion of the possibilities of fruit-

growing in each section. This is followed by lectures on the culture of the leading fruits. These deal with the kind of soil; preparation of soils for fruits; varieties; origination of new varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit garden.

Vegetable Gardening.—This course discusses the great trucking industry in the State, and the possibilities of the industry. This is followed by lectures on the best methods of growing the leading vegetables.

A few lectures are also given on the improvement of home grounds.

Laboratory Work.—This includes practices in plant propagation, as budding, grafting, top-grafting, cutting; pruning of fruit and ornamental trees; fruit-bud studies; planting trees; transplanting, and construction of cold-frames and hot-beds.

FEEDS AND FEEDING AND STOCK-RAISING. *21 periods.*

Assistant Professor Curtis.

Lectures on this study will consist of an elementary study of the digestive systems of the various classes of farm animals, indicative of the kinds of foods adapted to their particular digestive apparatus. This will be followed by the food constituents, the kind, amount and proportions best adapted to the various classes of live-stock. The student will be required to make tables of digestibility, calculate nutritive ratios, and arrange feeding rations for the several classes of stock relative to the work which they are to perform.

An outline will also be given on the feed, care, and management of the most prominent breeds of live-stock.

BREEDS OF LIVE-STOCK AND STOCK JUDGING. *21 periods.*

Assistant Professor Curtis.

Lectures are given on this subject relating to the origin, history, and characteristics of the different breeds of live-stock.

The practical part of the work will be given in the judging-room, where the student is required to score the animals, after which a comparative study will be taken up relative to the merits of each animal in the class.

DAIRY FARMING. *Lectures, 12 periods.*
Laboratory, 21 periods.

Associate Professor Michels.

Lectures are given on the nature, composition, and secretion of milk, its uses and values as a food, the production and care of sanitary milk, management of dairy herd, details in the production of high-grade cream and butter, the marketing of dairy products, and their value when sold as milk, cream, butter, and cheese.

The dairy laboratory course given in connection with the farm dairy lecture course consists of twenty-one periods of two hours each and comprises every detail of dairy work, butter-making, retailing milk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products, and standardizing milk and cream.

DAIRY EQUIPMENT.

The dairy laboratories occupy about four thousand square feet of floor space on the ground floor of the new Agricultural Building, besides the locker-rooms, toilet and bath-rooms on same floor, and the dairy lecture-room on first floor, used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes, cream vats, hand and power butter-workers, aerators and coolers, milk-testers, and other articles useful in doing farm dairy work.

DISEASES OF LIVE-STOCK. *21 periods.*

Dr. Roberts.

The lectures on this subject will deal principally with the care and management of live-stock with a view to the prevention of diseases, but the nature, causes, and treatment of the more common diseases and injuries will also be given attention. One period each week will be devoted to a clinic, and a practical demonstration of the tuberculin test upon the dairy herd will be given during the course.

ENTOMOLOGY. *21 periods.*

Mr. Smith.

This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course.

FARM CHEMISTRY. *21 periods.*

Professor Withers.

Lectures on chemistry of fertilizers and animal feeding will be given.

POULTRY-RAISING. *21 periods.*

Mr. Jeffrey.

The subject of Poultry-raising will be considered from the farm standpoint and will include poultry-house construction, the breeds of fowls most suited to the farm, and their breeding, feeding, and management, egg-production, market poultry, including capons and caponizing, incubation and brooding, both natural and artificial.

Those wanting more poultry work than is provided in the regular course can in the last half of the course have additional work of this kind, taking care of a pen of fowls, running an incubator, raising chickens in a brooder, and keeping all the records necessary in our poultry work.

The poultry department is equipped with twenty-five houses, a good incubator cellar with several different makes of incubators, a brooder house and both indoor and outdoor brooders, a feed-room with steam engine and grist and bone mills. Good specimens of ten varieties of poultry best suited to farm requirements are kept, so that students can get familiar with the requirements of the different breeds.

AGRICULTURE.

Equipment.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and twenty-five acres, with two hundred and fifty acres under cultivation; a large three-story and basement barn fifty by seventy-two feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse-power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The live-stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The poultry-yards contain the following

breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas, and Pekin Ducks.

The class and laboratory work is done in Agricultural Hall.

AGRONOMY.

Subjects of Instruction.

1. **Farm Equipment.**—Lectures and recitations upon selecting, planning, and equipping farms; planning and erecting farm buildings, farm vehicles, and machinery; power, water, and drainage; practical exercises in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Five periods, first term; two periods, third term. For Juniors. Professor CONNER.

2. **Soils.**—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, fertilizers, and mechanical analysis. Three periods, second term. For Juniors. Professor CONNER.

3. **Farm Crops.**—Lectures and recitations upon the history, production, harvesting, and marketing of farm crops. Practical exercises with growing and dried specimens of farm crops. Two periods, second and third terms. For Sophomores. Professor CONNER.

4. **Special Crops.**—This course is designed for advanced work in farm crops. Corn and cotton are taken up in detail and studied in all their relation to farm economy. Other crops of importance are taken up as time permits. Five periods, first term; three periods, second term. For Seniors. Professor CONNER.

5. **Soil Physics.**—This course is for more advanced work in soils, and consists of laboratory practice and lectures on origin, formation, and classification of soils; soil moisture and methods of conserving it; soil temperature; soil texture; mechanical analysis of soils, etc. The soils of the State will be studied. Free use of soil maps will be made. Three periods, third term. For Seniors. Professor CONNER.

6. **Farm Management.**—Lectures upon history of agriculture; present agricultural methods in various countries, cost and relation; profits of various farm operations and systems. Two periods, second and third terms. For Seniors. Professor CONNER.

7. **Agriculture (Elementary).**—The course in Elementary Agriculture will consist of lectures and recitations from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period

per week will be devoted to practical exercises, taking up the analysis and classification of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Five periods. Required of one-year students. Professor CONNER.

ANIMAL HUSBANDRY.

10. Breeds of Live-stock.—The origin, history, and characteristics of the several breeds of live-stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Two periods, first term. Required of Freshmen. Assistant Professor CURTIS.

11. Stock Judging.—Practical exercises are given in live-stock judging. The student is required, after familiarizing himself with the points of the score-card, to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, first term. Required of Sophomores. Assistant Professor CURTIS.

12. Animal Breeding.—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles or laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Sophomores. Assistant Professor CURTIS.

13. Herd Books.—In the study of herd books the student is taught the essential things which constitute a good pedigree. The breeding of pure-bred live-stock has advanced to such a degree that a record of the ancestry must be kept to preserve the purity and trace the performance of the breed. The foundation of the work will be based on the laws which govern breeding, together with the records issued by the various live-stock associations. The student is required to trace the ancestry of animals in their respective herd books. One period, second term. Required of Sophomores. Assistant Professor CURTIS.

14. Stock Feeding.—The course in stock feeding includes a study of the physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respect-

ive uses. The feeding of the various classes of animals will be studied, and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations. Four periods, third term. Required of Sophomores. Assistant Professor CURTIS.

15. Advanced Live-stock Judging.—This course will include advanced work in judging of live-stock. Particular stress will be laid on breed types of the different classes of farm animals. Heretofore only the dairy and beef types of cattle, fat and bacon types of swine, mutton and wool types of sheep have been considered. This advanced work will include judging of the particular breed types, classing under these general types, and will be a valuable attribute in fixing breed characteristics. Two periods, first term. Elective for Seniors. Assistant Professor CURTIS.

16. Live-stock Management, Beef and Dairy Cattle.—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. Two periods, second term. Elective for Seniors. Assistant Professor CURTIS.

17. Live-stock Management, Horses, Sheep, and Swine.—This course includes lectures and recitations on the feed, care, and management of horses, sheep, and swine in relation to the respective uses for which they are grown. Two periods, third term. Elective for Seniors. Assistant Professor CURTIS.

18. Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding, herd books, and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods. Required of one-year students. Assistant Professor CURTIS.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath-rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of

De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk-testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and also the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

22. **Dairying.**—Text-book and lecture course covering the fundamental principles of modern dairying. Two periods, third term. For Freshmen. Laboratory course consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Five periods, third term. For Freshmen. Associate Professor MICHELS.

23. **Dairy Bacteriology.**—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Two periods, first term. For Seniors. Laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. Three periods, first term. For Seniors. Associate Professor MICHELS.

24. **Cheese-making.**—This is a lecture and laboratory course on the manufacture of the leading brands of cheese. Three periods, second term. For Seniors. Associate Professor MICHELS.

25. **Experimental Dairying.**—Lecture and laboratory practice in making butter and cheese of special commercial importance, and a critical study of dairy literature. Three periods, third term. For Seniors. Associate Professor MICHELS.

26. **Dairying.**—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he

is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Five periods, first term. For one-year students. Associate Professor MICHELS.

POULTRY HUSBANDRY.

The poultry plant has nineteen breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; White and Brown Leghorn; Buff Dopington, Light Brahma, Black Minorca, and Pekin Ducks.

29. Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, third term. For Sophomores. Three periods, second and third terms. For one-year students. Mr. JEFFREY.

30. Poultry Husbandry.—Theory and practice of judging fowls by comparison and score-card; special poultry keeping for special markets; comparison of different systems of poultry keeping; a discussion of articles by best writers in poultry press. Three periods, third term. For Seniors. Mr. JEFFREY.

VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live-stock. In addition to the work required of all students in the agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the agricultural courses.

33. Animal Physiology.—The first term's work will deal largely with the structure of the body, whose uses are to be considered later. The second and third terms' work will deal with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating principles of physiology. Two periods, first term; four periods, second and third terms. Required of Freshmen. Doctor ROBERTS.

34. Veterinary Anatomy.—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors. Doctor ROBERTS.

35. Veterinary Medicine.—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors. Doctor ROBERTS.

36. Veterinary Practice.—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Two periods, third term. Required of Juniors. Doctor ROBERTS.

37. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection. Three periods. For Seniors. Doctor ROBERTS.

38. Diseases of Live-stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent diseases, and the treatment of some of the most common diseases. Five periods, second term. Required of one-year students. Doctor ROBERTS.

HORTICULTURE.

The Horticultural Department occupies rooms in the Agricultural Building, including class-rooms, laboratory, vegetable and fruit cold-storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

42. Fruit Culture.—A course treating of the location of orchards, soil for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include practices in budding, grafting, making cuttings, and a discussion of the principles underlying such practices. Also a study of varieties of fruits, fruit buds, and exercises in pruning. Five periods, first term. Required of Freshmen. Assistant Professor REIMER.

43. Vegetable Gardening.—This course deals with the selection and preparation of soil for vegetables, construction of hot-beds and cold-frames, fertilizing, handling of seeds, irrigation, transplanting, storing, and culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen. Assistant Professor REIMER.

44. Landscape Gardening.—This course deals with the planning, arrangement, and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees and shrubs, flowers and flower-beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Assistant Professor REIMER.

45. Advanced Pomology.—This is an advanced course in the study of fruits. It deals especially with the classification of fruits, as the botany, description, identification, and judging of fruits. It also treats the subject of harvesting and marketing of fruits, as picking,

grading, packing, and shipping. Also selling, fruit unions, and markets. Text-book and lectures. Three periods, first term. Elective for Seniors. Assistant Professor REIMER.

46. **Forestry.**—This course consists of a study of the fundamentals of forestry. It deals especially with the need, influence, formation, care, and improvement of forests. Also the cutting, use, and handling of forest products. A study is made of the forest trees of greatest importance in America. Three periods, first term. Elective for Seniors. Assistant Professor REIMER.

47. **Floriculture.**—In this course the important subject of forcing flowers and vegetables is taken up. It deals with the construction, heating, and ventilation of forcing-houses. Also the culture of the leading flowers and vegetables in such houses. Lectures and text-book. Three periods, second term. Elective for Seniors. Assistant Professor REIMER.

48. **Plant Breeding.**—This course includes a brief review of what has been accomplished in plant breeding and a discussion of the most important problems at the present time. It deals with the principles of plant breeding, as laws of breeding, variation and mutation, heredity, mendelian laws, crossing, selection, origination, and improvement of varieties. The subject is treated from the horticulturist's viewpoint, dealing with fruits, vegetables, and flowers. Lectures, text-book and laboratory work. Three periods, second term. More work can be taken by special arrangement if desired. Elective for Seniors. Assistant Professor REIMER.

49. **Horticultural Research.**—The last term of the Senior year the student makes a thorough study of modern experimental Horticulture. The leading horticultural investigations of the past and present are studied. A study is also made of all important literature of some horticultural subject. The latter will be chosen with reference to the student's future work. Six periods, third term. Elective for Seniors. Assistant Professor REIMER.

50. **General Horticulture.**—The course in Horticulture for the short-course students will be just as practical as it is possible to make it. The fall term will be devoted to fruit culture. Instruction will be given in budding, grafting, planting, varieties, preparation of soil, best methods of cultivation, cover crops, fertilizers, manures, pruning, and methods of harvesting and marketing. The instruction will apply especially to North Carolina.

During the winter term the subject of vegetable gardening will be taken up. This includes a discussion of the great trucking industry in North Carolina, possibilities in trucking in the State;

soil for vegetables and how to prepare different soils for vegetables; fertilizers and manures for vegetables; the home fruit and vegetable garden; how to get early and late crops; planting and transplanting; hot-beds and cold-frames; best methods of cultivating these crops; varieties, harvesting, and marketing.

The work during the spring term will be a continuation of the work given during the winter term. A few lectures will also be given on the improvement of home grounds and on forestry. Three periods. Required of one-year students. Assistant Professor REIMER.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture-room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, an incubator-room, and a cold-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fire-proof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

Subjects of Instruction.

55. **Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his

own through field-work and simple independent investigations. Three periods. Required of Freshmen. Three periods, third term. Required of one-year students. Professor STEVENS and Mr. EASON.

56. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor STEVENS.

57. Plant Diseases.—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Two periods, third term. Required of one-year students. Professor STEVENS.

58. Plant Diseases (Advanced).—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor STEVENS.

59. General Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor STEVENS and Mr. TEMPLE.

60. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Two periods. For Seniors. Professor STEVENS and Mr. TEMPLE.

ZOOLOGY.

64. Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-book. One term is devoted to vertebrates and invertebrates, with only a very brief study

of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Four periods, first term. Required of Sophomores. Mr. SMITH.

ENTOMOLOGY.

65. Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade and ornamental plants; *f*, of barn, mill, and household. Lectures and demonstrations. Three periods, second term. Required of Sophomores. Mr. SMITH.

66. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life history, and habits. Lecture and laboratory practice. Two periods, first and second terms. For Seniors. Mr. SMITH.

68. Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, third term. Required of one-year students. Mr. SMITH.

GEOLOGY.

69. Geology.—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors.

CHEMISTRY.*

70. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the

*For further information, see course in Chemistry.

science. The lectures are illustrated with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

71. **Inorganic Chemistry.**—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

72. **Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Elective for Seniors. Professor WITHERS.

73. **Analytical Chemistry.**—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Seven periods, first term. Elective for Seniors. Doctor WILLIAMS.

74. **Analytical Chemistry.**—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Seven periods, second and third terms. Elective for Seniors who have taken Course 73. Doctor WILLIAMS.

75. **Agricultural Chemistry.**—Snyder's *Soils and Fertilizers*, and Jordan's *Feeding of Animals.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

76. **Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries, particularly those whose raw materials are supplied by agriculture or whose products are utilized in agriculture. Three periods. Elective for Seniors. Professor WITHERS.

PHYSICS.*

78. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. HEWLETT.

METEOROLOGY.

79. Meteorology and Climatology.—This course consists of twenty-six or more lectures and deals with the fundamental principles of the sciences. Instruction is given in the practical as well as the theoretical branches of the subjects. There will be exercises in map-making and forecasting the weather. The class will visit the local office of the United States Weather Bureau at Raleigh, N. C., and considerable time will be devoted to the study of weather instruments, map-making and recording of data. Special emphasis is given the subjects in their relation to agriculture. Some lectures are illustrated with lantern slides. Two periods, second term. For Seniors. Mr. THIESSEN.

DRAWING.†

80. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, first term. Required of Juniors. Mr. VAUGHAN.

SHOP-WORK.†

82. Wood-work.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. Two periods, second and third terms. Required of Juniors. Mr. CLAY.

83. Forge-work.—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. Two periods, third term. For Juniors. Mr. WHEELER.

MATHEMATICS.

84. Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial

*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shop-work, drawing, and other Mechanical Engineering subjects, see course in Mechanical Engineering.

fractions. Five periods, first term; two periods, second term. Required of Freshmen. Mr. RICHARDSON and Mr. J. A. PARK.

85. Geometry.—Wentworth's *Plane and Solid Geometry. Plane Geometry.* Three periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

87. Introductory Composition and Rhetoric.—This course in the fundamentals of rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. BONN.

88. Rhetoric, Criticism, Essays.—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Three periods, first term. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

89. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of exercises. Required of Seniors. Two periods, third term. Professor HILL.

90. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

91. English Literature.—The development of English literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, second and third terms. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three or four hours per week, according to the size and convenience of the classes. When four hours are given, the class receives its instruction twice a week, and each time two hours in succession.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German, French, and Spanish.

92. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Doctor RUDY.

93. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor RUDY.

94. Spanish.—Worman's *Modern Languages*, first and second Spanish books; a Spanish grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Doctor RUDY.

HISTORY.

95. English History.—The text is supplemented by lectures on important periods. Two periods, first term. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

96. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book, Parsons' *Laws of Business.* One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. President WINSTON.

98. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

99. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first term. Two periods, second and third terms. Required of all classes except Seniors. Seniors are to either take drill or two extra hours in some other subject instead. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

ENGINEERING COURSES.

Four-year Courses in

II. Civil Engineering.
III. Mechanical Engineering.
IV. Electrical Engineering.
V. Mining Engineering.
VI. Industrial Chemistry.

Two-year Course in

IIIa. Mechanic Arts.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135†	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	..
Geometry, 264	..	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Architecture, 125	2	..	..
Architectural Drawing, 126	2	2	2
Geometry, 265	5	..	..
Advanced Algebra, 266	..	3	..
Trigonometry, 267	..	2	5
Descriptive Geometry, 101	..	2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 103 and 106	2	2	2
Surveying (field-work), 107	2	2	2
Construction, 105	2	..	..
Descriptive Geometry, 101	2	2	2
Graphic Statics, 102	..	2	2
Mechanics, 104	3	3	3
Analytical Geometry, 268	4	4	..
Calculus, 269	..	..	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

Mechanics of Materials, 115	3	..	..
Construction, 105	..	2	2
Road-building, 112	2	..	..
Roofs and Bridges, 109	3	..	..
Bridge Design, 110	..	4	4
Municipal Engineering, 111	..	2	2
Surveying (field-work), 108	2	..	..
Hydraulics, 116	..	3	3
Calculus, 269	3	..	..
Railroad Engineering, 106	2	..	..
Reinforced Concrete, 114	..	2	2
Astronomy, 113	..	2	2
Elect six periods from the following:			
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field-work.

Subjects of Instruction.

101. Descriptive Geometry, Stereotomy.—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. LANG.

102. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Professor RIDDICK and Mr. MANN.

103. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Mr. LANG and Mr. MANN.

104. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil and Mining Engineering. Mr. LANG and Mr. MANN.

105. Construction.—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

106. Railroad Engineering.—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Two periods, first term. Required of Seniors in Civil Engineering. Mr. LANG and Mr. MANN.

107. Surveying.—Field-work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. MANN and Mr. SYKES.

108. Surveying.—Field-work. Triangulation and topography, surveys for sewers, water-works, etc. Two periods, first term. Required of Seniors in Civil Engineering. Mr. MANN and Mr. SYKES.

109. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

110. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

111. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

112. Road-building.—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

113. Astronomy.—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers*. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

114. Reinforced Concrete.—Turneaure & Maurer's *General Theory of Concrete and Steel Construction*. Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN and Mr. LANG.

115. Mechanics of Materials.—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

116. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Three periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

ARCHITECTURE.

125. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Mr. MANN.

126. Architectural Drawing.—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN.

COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular four-year course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering work, and also to furnish him with a basis to carry on more advanced engineering studies. It treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers, and engines.

The two-year course is offered to students who wish to become machinists, draughtsmen, stationary engineers, or dynamo tenders.

The courses follow closely the methods adopted by the large manufacturing companies, both in drawing-room system and shop methods.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	..
Geometry, 264	..	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 139	2	2	2
Forge-work, 148	2	..	..
Pattern-making, 149	..	2	2
Geometry, 265	5	..	..
Advanced Algebra, 266	..	3	..
Trigonometry, 267	..	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Boilers, 157	2	..	..
Steam Engines, 158	..	2	..
Valve Gears, 159	..	..	2
Applied Mechanics, 169	3	3	3
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Electrical Engineering, 183	2	2	2
Analytical Geometry, 268	4	4	..
Calculus, 269	..	..	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK		
	1st Term.	2d Term.	3d Term.
Machine Design, 141	2	3	3
Machine-shop Work, 151	3	3	3
Power Plants, 161	..	..	4
Gas Engines, 162	5	..	..
Refrigeration, 163	..	3	..
Heating and Ventilation, 166	..	1	1
Pumping Machinery, 165	..	1	..
Structural Engineering, 167	..	2	2
Mechanics of Materials, 115	3	..	..
Steam Engineering Laboratory, 168	2	2	2
Calculus, 269	3	..	..
Hydraulics, 116	..	3	3
Elect six periods from the following:			
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

IIIa. The Two-year Course in Mechanic Arts.

First Year.

Free-hand Drawing, 135	4	..	..
Mechanical Drawing, 136	..	4	..
Descriptive Geometry, 137	..	..	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 261	5	..	..
Algebra, 262	..	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 171	2	2	2
Machine-shop Work, 150	3	3	3
Drawing, 171, or Machine-shop Work, 150	3	3	3
Mechanical Technology, 172	1	1	1
Steam and Steam Machinery, 173	2	2	2
Drawing, 171, or Shop-work, 150*	5	5	1
Algebra, 263, Drawing, 171, or Shop-work, 150*	5	2	..
Geometry, 264, Drawing, 171, or Shop-work, 150*	..	3	5
Military Drill, 299	3	2	2

*Shop-work to be either wood-working or machine-shop.

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop, office, and library. On the second floor are the recitation-room, two drawing-rooms, and a wood-finishing room. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine, a one-horse-power gasoline engine (all of which were built by students), a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a 4½x6x6 Blake air-pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a water-motor, a

Worthington water-meter, a complete Westinghouse air-brake equi ment, a New York air-brake equipment in section, friction brake weirs, indicators, planimeters, slide rules, thermometers, calorimeter gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, 15,000-pound Olsen testing machine, and other apparatus for makin tests.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenter benches, which accommodate thirty students, and all necessary too for each bench; thirty 12-inch turning lathes, each lathe being full equipped with turning tools; a rip and a cut-off saw bench, foot-fee with dado attachment; a double revolving rip and cut-off saw benc with dado attachment; a 20-inch surface planer; a 12-inch han jointer or buzz planer; a universal boring machine; a 6½-inch teno ing machine with cope heads; a 6-inch sash and blind sticker; 34-inch band-saw; a jig-saw; a shaper or edge-moulding machin with a very complete set of moulding cutters; a chain-mortiser; dovetailing machine; a 38-inch grindstone; a wood trimmer; an a justable miter-box; a steam glue-heater, and a large assortment screw and bar clamps, both iron and wooden.

The forge shop is a well-lighted and ventilated, neatly-paved roo thirty by forty feet. It is equipped with twenty-eight forges, bla being furnished from a Sturtevant blower; two emery and two bu fing wheels; a Buffalo Forge Company's hand drill; an overhead e haust system, operated by a 60-inch Sturtevant exhaust fan, for r moving smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis and Eagan lathe wit 10-foot bed, 14-inch Windsor lathe with 5-foot bed, a 13-inch Barn lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-fo bed (built in the College shops by students), a 26-inch by 44-inch b 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, 24-inch upright Bickford drill press, 32-inch American drill press, Brown & Sharp universal milling machine with all attachments, a 2 inch by 5-foot Pease planer, one large and one small emery tool-grin ing machine, a 6-inch Curtis & Curtis pipe-threading and cutting m chine, a Greenwich arbor press and an electric center grinder, Whiton centering machine, and a Twist drill grinder. The machin have full equipment of chucks, rests, and tools. The benches are we provided with vises.

The tool-room is well equipped with the necessary hand and pi tools.

The power for the shops is furnished by electric motors.

Subjects of Instruction.

135. **Free-hand Drawing.**—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing. Two periods, first term. Required of Freshmen. Four periods, first term. Required of first-year students in Mechanic Arts. Mr. VAUGHAN.

136. **Elementary Mechanical Drawing.**—Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen. Four periods, second term. Required of first-year students in Mechanic Arts. Mr. VAUGHAN.

137. **Descriptive Geometry Drawing.**—Elementary principles; cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods, third term. Required of Freshmen. Four periods, third term. Required of first-year students in Mechanic Arts. Mr. VAUGHAN.

139. **Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. ELLIS.

140. **Machine Design.**—Study of the communication of motion by gear wheels, cams, belts, and link-work; automatic feed, parallel and quick return motions. Epicylic trains. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. ELLIS.

141. **Machine Design.**—Estimating, checking of working drawing, original design. Calculations and working drawings of types of engines, boilers, pumps, condensers, shafting, etc. Two periods, first term. Three periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

Students are required to stamp their drawings with the College stamp, similar to the practice in the drawing-rooms of the large manufacturing companies. Encouragement is given to original design, especially when carried through the shops to a complete working machine.

146. **Wood-work.**—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Two periods. Required of Freshmen. Three periods. Required of first-year students in Mechanic Arts. Mr. CLAY.

147. **Forge-work.**—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Required of Freshmen. Three periods. Required of first-year students in Mechanic Arts. Mr. WHEELER.

148. **Forge-work.**—Exercises in working with steel. Tempering. Case-hardening. Two periods, first term. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. WHEELER.

149. **Pattern-making.**—Exercises in making patterns and moulds of machine parts. Two periods, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CLAY.

150. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Three periods. Required of second-year students in Mechanic Arts. Mr. PARK.

151. **Machine-shop Work.**—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Three periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

152. **Mechanical Technology.**—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of first-year students in Mechanic Arts. Mr. CLAY.

157. **Boilers.**—Steam generation; types, care and management; fittings and appliances, corrosion and incrustation; combustion of fuel; boiler power. Two periods, first term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and in Mining Engineering. Professor THOMAS.

158. **Steam Engines.**—Types—simple and compound, and triple expansion, automatic, Corliss, rotary, turbines. Care and management. Indicators, indicated and brake horse-power. Condensers. Two periods, second term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and Mining Engineering. Professor THOMAS.

159. **Valve Gears.**—Plain slide valve, balance valve, Corliss and other form valve gears, link and radial reversing gears. Shaft governors. Bilgram and Zeuner valve diagrams. Two periods, third term. Required of Juniors in Mechanical Engineering, and of Seniors in Mining Engineering. Professor THOMAS.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Four periods, third term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

162. Gas Engines.—Theory of the gas engine. Various types of gas, gasoline, and oil engines. Brake and indicated horse-power; efficiency. Gas producers. Five periods, first term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Carbon dioxide and compressed-air machines. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Water-works machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. One period, second and third terms. Required of Seniors in Mechanical Engineering. Professor THOMAS.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

168. Steam Engineering Laboratory.—Practice in engine running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Two periods; required of Seniors in Mechanical Engineering. One period; required of Seniors in Electrical Engineering. A brief course in Surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines, and machinery by the use of transit and level. Professor THOMAS and Mr. ELLIS and Mr. VAUGHAN.

169. Applied Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. VAUGHAN.

171. Mechanical Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blue-

printing. Two periods. Required of second-year Mechanic Arts students. Mr. VAUGHAN.

172. Mechanical Technology.—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangement and sizes of belting, pulleys, and shafting. One period. Required of second-year students in Mechanic Arts. Professor THOMAS.

173. Steam and Steam Machinery.—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Two periods. Required of second-year students in Mechanic Arts. Professor THOMAS.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Free-hand Drawing, 135	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	..
Geometry, 264	..	3	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 265	5	..	..
Advanced Algebra, 266	..	3	..
Trigonometry, 267	..	2	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Forge-work, 148	2	..	..
Pattern-making, 149	..	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 183	5	5	5
Electrical Engineering Laboratory, 186	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Applied Mechanics, 169	3	3	3
Analytical Geometry, 268	4	4	..
Calculus, 269	..	..	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

Electrical Engineering, 184	5	5	5
Electrical Engineering Laboratory, 190	2	2	2
Electrical Design, 191	2	2	2
Boilers, 157	2	..	..
Steam Engines, 158	..	2	..
Steam Engineering (laboratory), 168	1	1	1
Calculus, 269	3	..	..
Hydraulics, 116	..	3	3
Elect six periods from the following:			
Business Law, 295	1	1	1
English Literature, 276 and 274	2	2	2
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound, and light. Text-book used: Carhart & Chute's *High School Physics*. Four periods. Required of Freshmen in Engineering courses. Mr. HEWLETT.

177. Elementary Lessons in Electricity and Magnetism.—Text-book used: *Elementary Electricity and Magnetism*, by D. C. & J. P. Jackson. Two periods. Required of Sophomores. Professor MOORE.

178. Physical Laboratory.—Practice in handling units in British and metric systems. Experiments in mechanics, illustrating addition and composition of forces, the lever, the inclined plane, the pendulum, density, and specific gravity, and Boyle's law. Experiments in heat, sound, and light, covering the following subjects: Thermometer calibration, calorimetry, hygrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscope. Text-book used: Cheston-Dean-Timmerman's *Laboratory Course in Physics*. One period. Mr. SPRAGUE.

179. Physical Laboratory.—Continuation of Course 178. Elementary experiments in magnetism. The electric circuit. Primary batteries. Measurement of electro-motive force, current, and resistance. Telegraph and telephone circuits. Required of Sophomores in Electrical, Mining, and Mechanical Engineering, and in Chemistry. Mr. HEWLETT.

ELECTRICAL ENGINEERING.

Equipment.

For this course two laboratories are equipped: one known as the instrument laboratory, in which measuring instruments and apparatus are kept, and the other as the dynamo laboratory, containing generators, motors, transformers, switchboards, etc. The instrument

laboratory is provided with direct and alternating current voltmeters, ammeters, and wattmeters, Wheatstone bridges, galvanometers, condensers, etc. It is supplied from the central power-house with direct and alternating currents of any voltage, phase, or frequency for use in checking instruments and making measurements. The dynamo laboratory is a small one-story brick building 30 x 50 feet, and is equipped with a 3-phase synchronous motor coupled directly to a line shaft arranged to drive small generators, an 11.5 K. W. 110-volt Westinghouse D. C. generator, 20 K. W. 2-phase 110-volt Lincoln alternator, one 6-light T. H. arc-lighting generator, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens & Halske generator, one 2-horse-power 3-phase 110-volt G. E. induction motor, one 2 K. W. 110-volt LaRoche single-phase alternator, two 2½ K. W. 110-volt 3-phase generators, two 2½ K. W. 125-volt compound wound D. C. generators with series coils for use as series motors or generators, one 2½ K. W. 110-volt A. C. rotary converter, one 30-ampere Hewitt mercury rectifier. The laboratory also contains constant potential and constant current transformers, condensers, circuit-breakers, etc., and a switchboard well equipped with voltmeters, ammeters, frequency indicators, etc.

The central power station is also available for student use, the equipment consisting in a 75 K. W. 600-volt 3-phase Crocker-Wheeler generator coupled to a Skinner engine, two 50 K. W. 300-volt 3-phase Crocker-Wheeler generators coupled to a 150-horse-power De Laval steam turbine, one 9.5 K. W. 125-volt Westinghouse D. C. exciting generator, and switchboard provided with meters, instrument transformers, oil circuit-breakers, wattmeters, synchroscope, etc.

The department possesses a small library of standard books on all branches of Physics and Electrical Engineering.

183. Electrical Engineering.—The magnetic circuit. Electrical measurements. Electro-magnetic induction. Storage batteries. Arc-lighting. Incandescent lighting. Interior wiring. Dynamos and dynamo design. Direct current motors. Management and operation of dynamos and motors. Text-books used: *International Correspondence School Pamphlets* and Crocker-Wheeler's *Management of Electrical Machinery.* Five periods. Required of Juniors in Electrical Engineering. Two periods. Required of Juniors in Mechanical Engineering. Professor MOORE.

184. Electrical Engineering.—Practice in calculating circuits containing resistance, inductance, and capacity. Alternators. Design of alternating current apparatus. Power transformation and measurement. Line construction. Switchboards and appliances. Electric

power stations. Electric car equipment. Motors and controllers. Line and track. Line calculations. Multiple unit systems. Theory of operation and design of transformers, induction motors, A. C. series motors, and repulsion motors. Text-books used: Hay's *Alternating Currents* and *International Correspondence School Pamphlets.* Five periods. Required of Seniors in Electrical Engineering. Professor MOORE.

186. Electrical Engineering Laboratory.—Practice in varying the ranges of ammeters and voltmeters. Various methods of measuring resistance. Permeability and hysteresis tests. Practice with direct current generators and motors. Characteristic curves. Efficiency tests. Two periods. Required of Juniors in Electrical Engineering. Mr. ADAMS.

190. Electrical Engineering Laboratory.—Senior year. Coupling D. C. generators for parallel, series and three-wire operation. Stray power tests. Kapp's pumping back method. Heat test of a D. C. dynamo. Series and parallel A. C. circuits. Platting vector diagrams. Experiments with A. C. generators, induction and synchronous motors, transformers, etc. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Mr. ADAMS.

191. Electrical Design.—Design of magnets, dynamos, alternators, induction motors, and transformers. Two periods. Required of Seniors in Electrical Engineering.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery, and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	..
Geometry, 264	..	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Forge-work, 148	2	..	..
Pattern-making, 149	..	2	2
Geometry, 265	5	..	..
Advanced Algebra, 266	..	3	..
Trigonometry, 267	..	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 105	2	..	..
Graphic Statics, 102	..	2	2
Surveying, 103 and 106	2	2	2
Surveying (field-work), 107	2	2	2
Descriptive Geometry, 101	2	2	2
Mechanics, 104	3	3	3
Analytical Geometry, 268	4	4	..
Calculus, 269	..	..	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

Mining, 206	..	4	4
Ore Dressing, 207	4	..	..
Geology, 211	2	2	2
Metallurgy, 208	..	2	2
Mineralogy, 212	4	..	..
Assaying, 209	..	2	2
Boilers, 157	2	..	..
Steam Engines, 158	..	2	..
Valve Gears, 159	..	..	2
Hydraulics, 116	..	3	3
Calculus, 269	3	..	..
Elect six periods from the following:			
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, sloping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining.

208. Metallurgy.—Introductory: combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining.

GEOLOGY AND MINERALOGY.

211. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors in Mining.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining.

COURSES IN INDUSTRIAL CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in the analytical or the operating departments of the various chemical industries. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

Raleigh as a Chemical Center.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

Chemical Equipment.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing of oils, metallurgy of iron, metallurgy of copper, dyeing of cotton goods, in seven agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and eleven other States.

VI. The Four-year Course in Industrial Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 263	5	2	..
Geometry, 264	..	3	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
norganic Chemistry, 216	3	3	3
norganic Chemistry (laboratory), 217	2	2	2
lectricity and Magnetism, 177	2	2	2
hysical Laboratory, 179	1	1	1
lementary Botany, 241	3	3	3
eometry, 265	5	..	..
dvanced Algebra, 266	..	3	..
rigonometry, 267	..	2	5
nglish, 273 and 275	3	3	3
ilitary Drill, 299	3	2	2

Junior Year.

rganic Chemistry, 218	3	3	3
nalytical Chemistry, 220 and 226	7	7	7
acteriology, 251	2	2	2
erman, 277	3	3	3
nglish and History, 283 and 276	2	2	2
olitical Economy, 297	1	1	1
ilitary Tactics, 300	1	1	1
ilitary Drill, 299	3	2	2

Senior Year.

ndustrial Chemistry, 233	3	3	3
nalytical Chemistry, 226	7	7	7
rganic Chemistry (laboratory), 228	4	4	4
acteriology, 252	2	2	2
Elect six periods from the following:			
nglish, 276 and 274	2	2	2
usiness Law, 295	1	1	1
ilitary Drill, 299	3	2	2
erman, 277	3	3	3

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

217. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

218. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Chemistry. Professor WITHERS.

220. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Seven periods, first term. Required of Juniors in Chemistry. Doctor WILLIAMS.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Chemistry. Seven periods. Required of Seniors in Chemistry. Doctor WILLIAMS.

228. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dye-stuffs is prepared and the properties studied. Four periods. Required of Seniors in Chemistry. Doctor SYME.

233. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Three periods. Required of Seniors in Chemistry. Professor WITHERS.

BOTANY.

241. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading, regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Sophomores in Chemistry. Professor STEVENS and Mr. EASON.

BACTERIOLOGY.

251. General Bacteriology.—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor STEVENS and Mr. TEMPLE.

252. Bacteriology, Advanced.—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS and Mr. TEMPLE.

MATHEMATICS.

While the subject of Mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet, at the same time, it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises and lectures, the scope being quite sufficient for the needs of the institution.

261. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students in Mechanic Arts. Mr. RICHARDSON and Mr. SYKES.

262. Algebra.—Wells's *New Higher Algebra* up to quadratic equations. Five periods, second and third terms. Required of first-year students in Mechanic Arts. Mr. RICHARDSON and Mr. SYKES.

263. Algebra.—Wells's *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Required of Freshmen and second-year students in Mechanic Arts. Mr. RICHARDSON and Mr. J. A. PARK.

264. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Three periods, second term; five periods, third term. Required of all Freshmen and second-year students in Mechanic Arts. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

265. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

266. Advanced Algebra.—Wells's *New Higher Algebra.* Compound interest and annuities, permutations, combinations, continued fractions, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

267. Trigonometry.—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

268. Analytical Geometry.—Nichols's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Four periods, first and second terms. Required of Juniors in Engineering. Professor YATES.

269. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of undeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Four periods, third term. Required of Juniors. Three periods, first term. Required of Seniors. Professor YATES.

ENGLISH.

271. English Composition.—A drill on the forms of the language, the correct relation of words, the sentence, the paragraph. Daily written exercises. Three periods. Required of first-year students in Mechanic Arts. Doctor SUMMEY and Mr. BONN.

272. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students

write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. BONN.

273. Rhetoric, Criticisms, Essays.—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. BONN.

274. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of exercises. Required of Seniors. Two periods, third term. Professor HILL.

275. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

276. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor HILL.

MODERN LANGUAGES.

The aim of the department is to enable one (*a*) to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and (*b*) to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more ad-

vanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three or four hours per week, according to the size and convenience of the classes. When four hours are given, the class receives its instruction twice a week and each time two hours in succession.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German, French and Spanish.

277. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Doctor RUDY.

278. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor RUDY.

279. Spanish.—Worman's *Modern Languages*, first and second Spanish books; a *Spanish Grammar* to be selected; *Fontaine's Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Doctor RUDY.

HISTORY.

283. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

295. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parsons' *Laws of Business.* One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

297. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. President WINSTON.

298. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

299. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours. Required of all classes except Seniors. Elective for Seniors. Commandant and Officers of the Battalion.

300. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty One period. Required of Juniors. Lieutenant YOUNG.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.
VIIIb. Special Ten Weeks' Course in Carding and Spinning.
VIIIc. Special Ten Weeks' Course in Weaving and Designing.

THE TEXTILE DEPARTMENT.

The Textile Department is located in a new building recently erected for its use. The instruction given in this department is in the theory and practice of cotton manufacturing. The building, which is a typical cotton mill, is fully equipped with all the necessary machinery for manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department three courses of instruction are offered, the four-year course leading to the degree of Bachelor of Engineering, the two-year course and the ten-weeks' winter course in carding and spinning, weaving, and designing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to mature students who cannot spend the time required for the four-year course, or who have had considerable practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

Special Ten Weeks' Courses.

Special ten weeks' courses are offered to practical mill men in carding and spinning, weaving and designing. These courses are given during the winter of each year, beginning with the opening of College in January and lasting until the middle of March. They aim to meet a demand from cotton-mill superintendents, overseers, and practical men for special instruction in the subjects named.

The textile instruction given is of a practical nature and covers the entire ground of cotton manufacturing. Its object is to prepare the student for a useful career in this industry. There is a demand from the mills in this and other States for young men technically trained in the manufacture of cotton goods, especially of the finer grades. That the graduates are meeting with success in this industry is shown by the positions held by them. Among these are president, secretary and treasurer, manager, superintendent, designer, overseer of weaving, mill architect, machinery salesman. In fact, the graduates have gone into almost every branch of cotton manufacturing and have met with success. All have received the same training. The point to which each has advanced has depended upon the ability to deal with the general problems of manufacturing.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and classroom for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening-room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding-room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11 x 5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9 x 4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7 x 3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6 x 2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning-room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by The T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen loom; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn & Lincoln, Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2 x 1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton 4 x 1 box gingham loom, one Crompton 4 x 1 box loom with 20-harness dobby, one Crompton single-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4 x 4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One 2 x 1 box loom with 600-hook Jacquard machine, made by Joseph Battles Manufacturing Co., Lawrence, Mass. One 4 x 1 box table-cover loom with 624-hook Halton Jacquard Machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, and alkalies, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

Badische Company, 128 Duane St., New York, samples Indanthrine dyestuffs and color cards.

A. Klipstein & Co., 122 Pearl St., New York, 2 pounds aniline oil, 2 pounds aniline salt.

Farhenfabriken of Elberfield Co., 66 Lafayette St., New York, 5 pounds Malapale soap, large collection of dyestuffs and color cards.

Berlin Aniline Works, New York, samples of dyestuffs and color cards.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks, Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

Heating Plant.

Steam Coils and Blowing Fan, made by B. F. Sturtevant Co., Boston, Mass.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301†	1	1	1
Weaving, 302	2	2	2
Free-hand Drawing, 316	2	..	..
Mechanical Drawing, 317	..	2	..
Descriptive Geometry, 318	..	..	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Algebra, 335	5	2	..
Geometry, 336	..	3	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Military Drill, 359	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	..	..
Advanced Algebra, 338	..	3	..
Trigonometry, 339	..	2	5
English, 342 and 344	3	3	3
Military Drill, 359	3	2	2

Junior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Warp Preparation (special), 302	..	..	2
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Boilers, 326	2	..	..
Engines, 327	..	2	..
English and History, 347 and 345	2	2	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2
Modern Languages (elective), 348, 349, or 350	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	2	2	2
Cloth Analysis, 304	1	1	1
Dyeing, 306	2	2	2
Machine-shop Work, 324	2	2	2
Elect six periods from the following:			
English, 345 and 343	2	2	2
Business Law, 352	1	1	1
Military Drill, 359	3	2	2
Modern Languages, 348, 349, or 350	3	3	3

VIIIa. The Two-year Course in Textile Industry.

First Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Free-hand Drawing, 316	2	..	..
Mechanical Drawing, 317	..	2	..
Descriptive Geometry, 318	..	..	2
Forge-work, 321	2	2	2
Arithmetic, 333	5	..	..
Algebra, 334	..	5	5
English, 340	3	3	3
Military Drill, 359	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	5	5	5
Weaving, 302	6	6	6
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Machine-shop, 324	2	2	2
English, 341	3	3	3
Military Drill, 359	3	3	3

Description of Subjects.

301. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of Freshmen, Sophomores, Juniors, and Seniors, and of first and second year students. Assistant Professor PARKER.

302. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinder; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms

and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors, and of first and second year students. Professor NELSON and Mr. STEED.

303. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honey-comb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piques. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to

design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors, and of first and second year students. Professor NELSON, Mr. SHUFORD, and Mr. STEED.

304. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Draughting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, and Seniors, and of first and second year students. Professor NELSON, Mr. SHUFORD, and Mr. STEED.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dyestuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
arding and Spinning, 301	1	1	1
Weaving, 302	2	2	2
ree-hand Drawing, 316	2	..	..
lechanical Drawing, 317	..	2	..
escriptive Geometry, 318	..	..	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Algebra, 335	5	2	..
Geometry, 336	..	3	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Military Drill, 359	3	2	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	..	..
Advanced Algebra, 338	..	3	..
Trigonometry, 339	..	2	5
English, 342 and 344	3	3	3
Military Drill, 359	3	3	3

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 311	3	3	3
Analytical Chemistry, 312 and 313	7	7	7
English and History, 345 and 347	2	2	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2
Modern Languages (elective), 348, 349, or 350	3	3	3

Senior Year.

Dyeing, 306	2	2	2
Industrial Chemistry, 315	3	3	3
Analytical Chemistry, 313	7	7	7
Organic Chemistry (laboratory), 314	4	4	4
Elect six periods from the following:			
English, 345 and 343	2	2	2
Business Law, 352	1	1	1
Military Drill, 359	3	2	2
Modern Languages, 348, 349, or 350	3	3	3

Description of Subjects.

306. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalies, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyes and their application to cotton

After-treatment of direct colors, including diazotising and developing and the topping with basic colors. The application to cotton of basic colors, acid colors, mordant colors, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur colors, indigo, natural and artificial, aniline black, turkey red, and other insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabric composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalies and reducing agents on several samples taken from the different classes of dyestuffs. The use of hyraldite and other stripping agents.

Olney's *Textile Chemistry and Dyeing* is used as a text in connection with a course of lectures, which will include the consideration of many difficult problems that arise in the dye-house. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

307. Dyeing Laboratory.—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur colors. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a scrap-book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

CHEMISTRY.*

309. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

310. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

311. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Dyeing and elective for Seniors in Textile Industry. Professor WITHERS.

312. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Seven periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.

313. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Seven periods. Required of Seniors in Dyeing. Doctor WILLIAMS.

314. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Four periods. Required of Seniors in Dyeing. Doctor SYME.

315. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of

*For further information, see course in Chemistry.

engineering. Three periods. Required of Seniors in Dyeing. Professor WITHERS.

MECHANICAL ENGINEERING.*

316. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. VAUGHAN.

317. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen and first-year students. Mr. VAUGHAN.

318. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms; intersection development of surfaces; miscellaneous problems. Two periods, third term. Required of Freshmen. Mr. VAUGHAN.

320. Wood-work.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY.

321. Forge-work.—Exercises in working with iron, welding; use and care of forge-tools and fires. Two periods. Required of Freshmen. Mr. WHEELER.

324. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. PARK.

326. Boilers.—Steam generation; types, care and management; fittings and appliances; corrosion and incrustation; combustion of fuel; boiler power. Two periods, first term. Required of Juniors. Professor THOMAS.

327. Steam-engines.—Types—simple and compound and triple expansion, automatic, Corliss, rotary. Care and management. Indicators, indicated and brake horse-power, condensers. Two periods, second term. Required of Juniors. Professor THOMAS.

PHYSICS.†

331. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. HEWLETT.

*For full information, see course in Mechanical Engineering.
†For full information, see course in Electrical Engineering.

MATHEMATICS.*

333. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. RICHARDSON and Mr. SYKES.

334. Algebra.—Wells's *New Higher Algebra.* Up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. RICHARDSON and Mr. SYKES.

335. Algebra (Continued).—Wells's *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Required of Freshmen. Mr. RICHARDSON and Mr. J. A. PARK.

336. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Three periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

337. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

338. Advanced Algebra.—Wells's *New Higher Algebra.* Compound interest and annuities, permutations, combinations, continued fractions, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

339. Trigonometry.—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulations, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

340. A drill on the forms of the language; the correct relation of words; the sentence; the paragraph. Daily written exercise. Three periods. Required of first-year students. Doctor SUMMEY and Mr. BONN.

341. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students

*For full information, see course in Engineering.

rite instead of studying about how to write. The written work is ccompanied by a steady drill on grammatical forms, accuracy, and ase of expression. The student is taught to plan all work, and then o develop his plan in simple, idiomatic English. Three periods a eek. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Ir. BONN.

342. Rhetoric, Criticisms, Essays.—The student is taught the essenials of good style by constant practice. Themes in narration, deeription, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. BONN.

343. Argumentation.—A study of the methods of our best speakers, ollowed by the laws of argumentation, and the writing of exercises. Required of Seniors. Two periods, third term. Professor HILL.

344. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

345. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

347. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates,

context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three or four hours per week, according to the size and convenience of the classes. When four hours are given, the class receives its instruction twice a week, and each time two hours in succession.

Students may take any one or all of the Modern Languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German, French and Spanish.

348. **German.**—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Doctor RUDY.

349. **French.**—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor RUDY.

350. **Spanish.**—Worman's *Modern Languages*, first and second Spanish books; a Spanish grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Doctor RUDY.

BUSINESS LAW AND CIVICS.

352. **Business Law.**—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: *Parsons' Laws of Business*. One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

353. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. President WINSTON.

354. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

359. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first term. Two periods, second and third terms. Required of all classes except Seniors. Seniors are to either take drill or two extra hours in some other subject instead. Commandant and Officers of the Battalion.

360. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

NORMAL COURSES.

I. For Rural Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) A Two Weeks' Spring Course.

II. For City Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) A Two Weeks' Spring Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and the College has a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the College, except in the May School.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Nature Study — Plants	3	3	3
Nature Study — Animals	3	3	3
English	3	3	3
Mathematics	5	5	5
Military Drill	3	2	2

Second Year.

Farm Equipment	4	..	..
Soils	..	4	..
Crops	..	..	4
Plant Diseases	3	..	..
Physics	..	3	..
Botany	..	..	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	2	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Methods of teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	..	..
Diseases of Live-stock	..	5	..
Botany	3	..	..
Poultry	..	3	3
Entomology	..	..	3
Diseases of Plants	..	..	2
Agricultural Literature	1	1	1

Elective in any College department; *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing and others.

II. Courses for City Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Wood-work	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	3

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing	2	2	2
Wood-work	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	4	4	4
Military Drill	3	2	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology 3, Physiological Botany 3.

(*b*) ONE-YEAR COURSE.

Drawing	3	4	4
Wood-work	4	5	5
Forge-work	2	2	2
Architecture	2	..	..
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	2	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

The May School for Teachers.

MAY 3 TO 15, 1909.

The chief subjects of instruction in this course are Agriculture and Nature Study. Attention is also given to school gardens and the common branches are reviewed, meeting the legal requirement that teachers attend an institute once in each two years.

No fees are charged to this course. Board is supplied at $2.50 a week, and lodging at $1 a week.

DONATIONS.

The College makes thankful acknowledgment of the receipt of the following gifts during the year:

To the Electrical Engineering Department.

General Electric Company, Harrison, N. J.—Samples of Tungsten Tantalum and general incandescent lamps.

To the Mechanical Department.

The John-Manville Co.—A full set of insulating materials for steam and refrigeration.

To the Animal Husbandry Department.

American Saddle Horse Register.—Five volumes.
Dutch Belted Cattle Breeders' Record.—Nine volumes.
American Chester White Record.—Seven volumes.
Merino Sheep Breeders' Record.—Three volumes.
American Oxford Down Record.—Two volumes.
American Leicester Sheep Breeders' Record.—Two volumes.
National DeLaine Sheep Breeders' Record.—Three volumes.
Standard Poland China Breeders' Record.—Twenty-one volumes.

To the Textile Department.

Lahne & Co., Lowell, Mass.—Two pair iron lug straps.

Emmons Loom Harness Company, Lawrence, Mass.—Loom harness and reeds.

Hampton Company, Easthampton, Mass.—Mercerized yarns.

Draper Company, Hopedale, Mass.—One sateen loom, ball warper, and loom supplies.

American Enamel Company, Providence, R. I.—Lease rods.

Lowell Machine Shop, Lowell, Mass.—Loom.

American Moistening Company, Boston, Mass.—Complete humidifying system.

Woonsocket Machine and Brass Company, Woonsocket, R. I.—Balls for top rolls.

Kilburn-Lincoln Company, Fall River, Mass.—Loom supplies.

Corn Products Refining Company, Chicago, Ill.—One barrel corn starch.

Fairpoint Corporation, New Bedford, Mass.—Tubes and cones.
Tolhurst Machine Works, Troy, N. Y.—Hydro extractor.
Jones & Laughlin Steel Company, Pittsburg.—Shafting, hangers, and pulleys for dye-house.
Edward R. Ladew, New York.—Reduction on belting.
The Robert Schaelibaum Company, Providence, R. I.—Two sets patent grids.

Courtesies Extended to the Textile Department.

American Textile Manufacturer, Charlotte, N. C.
Textile Manufacturers' Journal, New York.
Fiber and Fabric, Boston, Mass.
Textile World Record, Boston, Mass.
The Tradesman, Chattanooga, Tenn.
American Industries, New York City.
Cotton, Atlanta, Ga.
American Cotton and Wool Reporter, Boston, Mass.
Mill News, Charlotte, N. C.
The Dyer and Calico Printer, London, Eng.
Cassella Color Company, New York City.
Pilot Cotton Mills, Raleigh, N. C.
Caraleigh Cotton Mills, Raleigh, N. C.
Raleigh Cotton Mills, Raleigh, N. C.

To the Rural Science Club.

International Harvester Company, Chicago, Ill.—New reversible extension head disc harrow.

CATALOGUE OF STUDENTS.

GRADUATES.

Name.	*Post-office.*	*Course.*
George Gilderoy Allen,	Hiddenite,	Tex.
Wiley Theodore Clay, B.E.,	Hickory,	M. E.
Thomas Doterer Eason, B.S.,	Charleston, S. C.,	Agr.
Weldon Thompson Ellis, B.E.,	Spencer,	M. E.
Wm. Carlyle Etheridge, B.Agr.	Manteo,	Agr.
Clabence Wilson Hewlett, B.E.,	Wilson,	E. E.
William Kerr, B.S.,	Bryson City,	Agr.
John Luther McKinnon, B.Agr.,	Laurinburg,	Agr.
Thomas Franklin Parker, B.Agr.,	Raleigh,	Agr.
Samuel Oscar Perkins, B.S.,	Muttenz,	Chem.
Vance Sykes, B.E.,	Efland, R. 2,	C. E.
James Clarence Temple, B.Agr.,	Sanford,	Chem.
Reid Tull, B.E.,	Kinston,	C. E.
Lillian Lee Vaughan, B.E.,	Franklin, Va.,	M. E.
Arthur John Wilson, B.S.,	Knoxville, Ill.,	Chem.

SENIOR CLASS.

John Camillus App,	Charleston, W. Va.,	Chem.
Frank Oscar Baldwin,	Raleigh,	Chem.
George Francis Bason,	Charlotte,	E. E.
John Leland Becton,	Goldsboro,	C. E.
Harwood Beebe,	Baltimore, Md.,	C. E.
William Lamar Black,	Mooresville,	E. E.
Asa Gray Boynton,	Biltmore,	C. E.
Frank Hamilton Brown,	Cullowhee,	Agr.
John Harvey Bryan,	Goldsboro,	M. E.
William Bryant Burgess,	Rocky Mount,	E. E.
Lewellyn Hill Couch,	Lexington,	E. E.
Claud Council Dawson,	Grifton,	Tex.
Alvin Deans Dupree,	Greenville,	C. E.
Raymond Rowe Eagle,	Statesville,	C. E.
Minnie Luther Eargle,	Delmar, S. C.,	Agr.
Isaac Herbert Farmer,	Wilson,	C. E.

Name.	*Post-office.*	*Course.*
Benjamin Troy Ferguson,	Kimbolton,	Agr.
Warren Gross Ferguson,	Southern Pines,	E. E.
Percy Leigh Gainey,	Fayetteville, R. 7,	Agr.
Junius Talmage Gardner,	Shelby,	C. E.
Seth Mann Gibbs,	Middleton,	C. E.
Maurice Mordecai Glasser,	Charleston, S. C.,	E. E.
Moses Henry Gold,	Beaufort,	C. E.
John David Grady,	Albertson,	Agr.
Thomas Delaware Grimshawe,	Montvale,	C. E.
Dorsey Yates Hagan,	Greensboro,	C. E.
Maurice Hendrick,	Shelby,	Tex.
Herbert William Kueffner,	Durham,	C. E.
Claude Milton Lambe,	Durham,	C. E.
Charles Edward Latta,	Raleigh,	Tex.
Benjamin Bussey Lattimore,	Shelby,	C. E.
David Lindsay,	Stoneville, R. 1,	Tex.
John Henry Little,	Pinetops,	E. E.
George Lafayette Lyerly,	Hickory,	E. E.
Clarence Talmage Marsh,	Aulander,	C. E.
Larry Leonidas McLendon,	Wadesboro,	Agr.
David John Middleton,	Warsaw, R. 2,	Agr.
John Shaw Pescud,	Raleigh,	C. E.
Benjamin Franklin Pittman,	Tarboro,	E. E.
Lawrence Lyon Pittman,	Whitakers,	C. E.
Ruble Poole,	Randleman, R. 3,	C. E.
Harry Alexander Powell,	Fair Bluff,	Tex.
James Alexander Powell,	Raleigh,	M. E.
Thomas Milton Poyner,	Poplar Branch,	C. E.
Edgar English Smith,	Greensboro,	C. E.
James Lawrence Smith, Jr.,	Duke,	C. E.
Jesse Page Spoon,	Hartshorn,	Agr.
John Snipes Stroud,	Bynum,	Tex.
James Fenton Towe,	Chapanoke,	E. E.
John Lawrence Von Glahn,	Wilmington,	C. E.
Royall Edward White,	Aulander,	C. E.
John C. Williams,	Duke, R. 1,	C. E.
Woodfin Bradsher Yarbrough,	Locust Hill,	E. E.
John Franklin Ziglar,	Winston-Salem,	C. E.

JUNIOR CLASS.

Name.	*Post-office.*	*Course.*
John Allen Arey,	Elmwood,	Agr.
John William Barrett, Jr.,	Rocky Mount,	Agr.
Cecil DeWitt Brothers,	Conetoe,	C. E.
Thomas Kincaid Bruner, Jr.,	Raleigh,	Tex.
Charles Lee Clark, Jr.,	Weldon,	E. E.
Thorne McKinzie Clark,	Raleigh,	C. E.
Walter Miller Cowles,	Charlotte,	M. E.
John Bennett Craven,	Charlotte,	Chem.
Joseph Frank Davidson,	Statesville,	E. E.
William Samuel Dean,	Oxford,	Tex.
Carlton O'Neal Dougherty,	North, S. C.,	Tex.
Fred Atha Duke,	Raleigh,	C. E.
William Hunt Eaton,	Cleveland,	Agr.
Ralph Ringgold Faison,	Goldsboro,	Agr.
William Alexander Faison,	Goldsboro,	M. E.
Frank Lindsay Foard,	Winston-Salem,	Agr.
Roscoe Loomis Fox,	Waynesboro,	Tex.
Lewis Price Gattis,	Raleigh,	C. E.
Albert Sidney Johnston Goss,	Union, S. C.,	C. E.
Charlie Pool Gray,	Buxton,	C. E.
Andrew Hartsfield Green,	Raleigh,	Agr.
Cecil Linwood Griffin,	Manteo,	C. E.
William Roy Hampton,	Plymouth,	Chem.
John William Harrelson,	Lawndale,	M. E.
Gordon Harris,	Raleigh,	E. E.
George Harrison,	Enfield,	C. E.
Frank Hawks,	Kinston,	M. E.
Thomas Frederic Haywood,	Trenton,	C. E.
Leonard Henderson,	Salisbury,	M. E.
Bascombe Britt Higgins,	Leicester, R. 2,	Agr.
Daniel Harvey Hill, Jr.,	West Raleigh,	Chem.
Wayne Arington Hornady,	Burlington,	Agr.
Donald Barrett Iseley,	Burlington,	C. E.
John William Ivey,	LaGrange,	M. E.
William Fladger R. Johnson,	Marion, S. C.,	C. E.
Frederick John Jones,	New Bern,	C. E.
James Edward Latham,	Washington,	Agr.
Ralph Long,	Graham,	Agr.
Samuel Macon Mallison,	Washington,	C. E.

Name.	*Post-office.*	*Course.*
William Royden Marshall,	Rocky Mount,	M. E.
Ralph Cecil Mason,	Edenton,	Agr.
Arthur Ballard Massey,	Salisbury, Md.,	Agr.
Walker Morehead Millner,	Leaksville,	Tex.
Benjamin Franklin Montague,	Winston-Salem,	C. E.
Owen Moore,	Asheville,	Chem.
William Flaud Morris,	Ashboro,	M. E.
Samuel Loftin Oliver,	Mt. Olive, R. 2,	E. E.
Julius Monroe Parker,	Hunting Creek,	C. E.
John Gilbert Paschal,	Goldston,	E. E.
William Murdock Peck,	Wilmington,	C. E.
Isham Roland Peirce,	Warsaw,	Agr.
Peter Penick Pierce,	Pelham,	E. E.
Paul Miller Pitts,	Concord,	M. E.
John Moir Price,	Leaksville,	M. E.
Robert Richard Reinhardt,	Stanley Creek,	Agr.
Alfred Pratte Riggs,	Wanchese,	C. E.
Thomas Wood Robbins,	Durham,	E. E.
Joseph Henry Robertson,	Burlington,	E. E.
James Olin Sadler,	Charlotte, R. 12,	C. E.
Francis Webber Sherwood,	Raleigh,	Chem.
Robert Arnold Shope.	Weaverville,	C. E.
George Gray Simpson,	Norfolk, Va.,	Tex.
William Neville Sloan,	Franklin,	C. E.
Hugh Stuart Steele,	Yadkin Valley,	C. E.
Samuel Fatio Stephens,	Norfolk, Va.,	C. E.
Henry Newbold Sumner,	Hertford,	C. E.
Malvern Hill Terrell,	Old Fort,	C. E.
Claude Stratton Tate,	Littleton,	M. E.
John Dick Thomason,	Hickory,	M. E.
Frank Martin Thompson,	Raleigh,	Tex.
James Edwin Toomer,	Wilmington,	Chem.
Joseph Slaughter Whitehurst,	Elizabeth City,	C. E.
Oliver Gaines Whitley,	Albemarle,	C. E.
John Spicer Wilson,	Winston,	E. E.
Paul Adams Witherspoon,	Mooresville,	C. E.
Robert Job Wyatt,	Raleigh,	M. E.

SOPHOMORE CLASS.

James Cicero Albright,	Rock Creek,	E. E.
Alfred Scales Armfield,	Statesville,	Tex.
Charles Gray Armfield,	Statesville,	C. E.

Name.	*Post-office.*	*Course.*
Robert Alban Atkinson,	Lenoir,	E. E.
Robert Kenneth Babington,	Gastonia,	E. E.
Thomas Roper Baldwin, Jr.,	Mt. Gilead,	Tex.
Andrew Jackson Beall,	Charlotte,	E. E.
John Burgess Berrier,	Lexington, R. 3,	E. E.
Fred McCullough Black,	Mooresville,	E. E.
Thomas Sawyer Bond,	Windsor,	C. E.
Roy Bowditch,	Toe Cane,	E. E.
George Washington Braddy,	Westbrook,	E. E.
Carl Ray Bradley,	Old Fort,	E. E.
John Benjamin Bray,	Sligo,	C. E.
James Sexton Bray,	Elkin,	Agr.
Thomas Johnson Brevard,	Fairview,	Agr.
Elton Elroy Buck,	Hampton, Va.,	C. E.
Von Porter Byrum,	Charlotte, R. 3,	M. E.
Henry Roy Cates,	Swepsonville,	Agr.
Joseph Blount Cherry,	Windsor,	E. E.
Da Costa Moore Clark,	Old Fort,	E. E.
Karl Barringer Cline,	Concord,	E. E.
Herbert George Coughenour,	Scotland Neck,	E. E.
Jesse Kea Council,	Wananish,	C. E.
John Monroe Council,	Wananish,	E. E.
William Henry Crow,	Monroe,	E. E.
William Earle Davis,	Hiddenite,	E. E.
Thomas Theodore Dawson,	Grifton,	C. E.
Edwin Gray Deans,	Wilson,	C. E.
James Leonidas Dunn,	Scotland Neck,	Agr.
Joseph Oscar Eller,	Berlin,	Agr.
Walter Frederick Eller,	Berlin,	M. E.
Robert Winston Etheridge,	Selma,	Chem.
Risden Bennett Gaddy,	Monroe,	E. E.
Ransom Eaton Gill,	Raleigh,	E. E.
William Thomas Grimes, Jr.,	Hamilton,	Chem.
Walter Pirson Hardee,	Stem,	Agr.
Thomas Devin Harris,	Oxford,	C. E.
Frank Hawks,	Kinston,	M. E.
Ernest Albert Haynes,	Raleigh,	C. E.
Edmund Burke Haywood,	Raleigh,	C. E.
Albert Roland Hicks,	Faison,	E. E.
Rufus Williams Hicks, Jr.,	Wilmington,	M. E.
Lyda Alexander Higgins,	Leicester, R. 2,	Agr.

Name.	*Post-office.*	*Course.*
Clinton White Hinshaw,	Winston-Salem,	M. E.
Murphy McNeill Holloway,	Cardenas,	M. E.
Louie Lee Hood,	Asheville,	C. E.
Robert Frank Jones,	Washington,	C. E.
Clyde Raymond Jordan,	Gulf,	E. E.
Linwood A. Joyner,	Jackson,	E. E.
Luther Hill Kirby,	Lenoir,	C. E.
William Hugh Kitchin,	Scotland Neck,	Agr.
Mark Clinton Lasitter,	Snow Hill,	C. E.
Edward Hugh Lee, Jr.,	Raleigh,	Agr.
Ashe Lockhart,	Wadesboro,	Agr.
Ulphian Carr Loftin,	West Raleigh,	Agr.
William Leake Manning,	Henderson,	E. E.
Melvin Solomon Mayes,	Stem,	M. E.
Frank Neeley McDowell,	Charlotte,	Agr.
Lennox Polk McLendon,	Wadesboro,	Agr.
Samuel Huxley McNeely,	Waxhaw,	E. E.
Leon Davis Moody,	East Laporte,	M. E.
Eugene Boise Moore,	Morven,	E. E.
Robert Lee Morgan,	Wilson,	M. E.
Herbert Pennell Moseley,	Kinston,	C. E.
Harry Mott,	Mooresville,	Agr.
Robert Livingston Murphy,	Morganton,	M. E.
William McCormick Neale,	Greensboro,	M. E.
Raymond Otterbourg,	Charlotte,	M. E.
Gus Palmer,	Gulf,	Agr.
Joe Baxter Parks,	Concord,	E. E.
William Casper Pennington,	Thomasville,	M. E.
William Ransome Phillips,	Dunn,	E. E.
James Bruce Price,	Leaksville,	E. E.
Frank Townley Redfearn,	Monroe,	E. E.
Archie Knight Robertson,	Rowland,	Agr.
Jay Frederick Robinson,	Hampton, Va.,	C. E.
Carl Collins Sadler,	Charlotte,	C. E.
Leon Raymond Sandford,	Norfolk, Va.,	C. E.
Earle Aloysius Siedenspinner,	Washington, D. C.,	Chem.
John Waldorf Sexton,	Salem Church,	C. E.
Carl Siler Slagle,	Franklin,	Agr.
Edwin Harrison Smith,	Weldon,	C. E.
Henry Lee Smith,	Dunn,	C. E.
John Francis Speight,	Whitakers,	C. E.

Name.	*Post-office.*	*Course.*
Samuel Adison Spencer,	Ashboro,	M. E.
St. Julian Lachicotte Springs,	Georgetown, S. C.,	Agr.
Charles Burt Stainback,	Henderson,	E. E.
Thomas Barnes Stansel,	Allenton,	Chem.
William Clark Styron,	Washington,	M. E.
Thomas Bryan Summerlin,	Mt. Olive,	E. E.
Lloyd Hurst Swindell,	Raleigh,	Tex.
Kenneth Spencer Tanner,	Charlotte,	Tex.
Walter Clyburn Taylor,	Rhodhiss,	Tex.
Thomas Hampton Thompson,	Thomasville,	M. E.
Isaac Norris Tull,	Kinston,	E. E.
Clement Manly Ware,	Morehead City,	C. E.
Charles Emmette Walton,	Hamilton, Ga.,	E. E.
Howard W. Welles, Jr.,	Poughkeepsie, N. Y.,	E. E.
David Rand Wellons,	Smithfield,	C. E.
John Stafford Wilson,	Charlotte,	Tex.
Edward Leigh Winslow,	Hertford,	C. E.
Daniel Cutts Young,	Cary,	M. E.

FRESHMAN CLASS.

Charles Vance Abernathy,	Shelby,	E. E.
Harvey Durward Abernethy,	Hickory,	E. E.
Hazel Robinson Aiken,	Hickory,	E. E.
Graham Hudson Anthony,	Shelby,	C. E.
John Erskine Ardrey,	Pinerville,	C. E.
Charles Raymond Austin,	Charlotte, R. 8,	E. E.
William Bailey,	Raleigh,	M. E.
Aubrey Leland Baker,	Raleigh,	Tex.
Robert Jones Barbee,	Raleigh,	C. E.
Tollie Chester Barber,	Pinnacle,	E. E.
John Mann Beal,	Rocky Mount, R. 3,	Agr.
Charles Edward Bell,	Kinston,	C. E.
Hinton Quinerly Best,	Grifton,	E. E.
Julius Hufham Bivens,	Cottonville,	Agr.
Alan Thurman Bowler,	Wilmington,	C. E.
Rufus Tucker Boylan,	Raleigh,	Agr.
Joseph Malcolm Bradfield,	Charlotte,	E. E.
James Howard Brown,	Charlotte, R. 4,	Agr.
Guy Kedar Bryan,	Tampa, Fla.,	C. E.
Kit Bryan,	Catharine Lake, R. 1,	C. E.
Henry Carl Buchan,	Manly,	Agr.

Name.	*Post-office.*	*Course.*
Charles Marshall Burroughs,	Portsmouth, Va.,	Chem.
Brice LeGrier Caldwell,	Concord,	M. E.
James Walter Call,	Mocksville,	M. E.
Henry Caleb Clay,	Hickory,	M. E.
Marshall Cloud Corl,	Concord,	E. E.
Charlie Albin Daniels,	New Bern,	M. E.
William Hurd Davis,	Marshville, R. 1,	E. E.
Edwin Sexton Dewar,	Raleigh,	M. E.
James Henry Durham, Jr.,	Wilmington,	E. E.
John Ivey Eason,	Speight's Bridge,	Agr.
James Thompson Edwards,	Morehead City,	M. E.
Julian Delk Elliott,	Edenton,	Tex.
Earl Montier Evans,	Raleigh,	M. E.
Robert Stackhouse Fairly,	Laurinburg,	Agr.
Archer Pleasant Farmer,	Fuquay Springs,	E. E.
James Grey Fennell,	Wilmington,	E. E.
Clem M. Flowers,	Maribel,	Agr.
Daniel Ralph Freeman,	Charlotte,	Agr.
Malthus Reamer Freeman,	Taylor,	Agr.
George Winbury Gillette,	Marines,	E. E.
Loomis McArthur Goodwin,	Raleigh,	E. E.
Robert Walter Graeber,	Concord,	Agr.
Charles Benjamin Green,	Kittrell,	C. E.
Charles Ganzer Hall,	Wilmington,	C. E.
William James Hall,	Clemmons,	E. E.
Thomas Jefferson Hardison,	Morven,	Agr.
Marmaduke James Hawkins, Jr.,	Ridgeway,	E. E.
Paul Hendren,	Chadbourn,	E. E.
Russell Poindexter Hewlett,	Wilson,	E. E.
James Hilliard,	Cary,	E. E.
Ernest Russell Hine,	Old Town,	C. E.
David Raymond Hinkle,	Lexington,	E. E.
Robert Lawford Holder,	Durham,	M. E.
James Roy Hutchison,	Charlotte, R. 7,	Tex.
Eugene Johnston,	Mooresville,	E. E.
Robert Thomas Joyner,	Rocky Mount,	E. E.
George Shirley Kilpatrick,	Kinston,	Tex.
John Smedes Knox,	Raleigh,	E. E.
Fabius Henry Kohloss,	Columbia,	C. E.
Wingate Agusta Lambertson,	Rich Square,	E. E.
Walter Moore Lambeth,	Fayetteville,	Tex.

Name.	*Post-office.*	*Course.*
John Emsley Lee,	Monroe,	Tex.
Richard Henry Lewis, Jr.,	Kinston,	M. E.
Thomas Seigle Linton,	Raleigh,	E. E.
Sidney MacDonald,	Wilmington,	C. E.
Joseph Jenkins Mackay, Jr.,	Raleigh,	M. E.
Grady Gilmer Marler,	Winston,	Tex.
Jacob Lee Martin,	Graham,	E. E.
William Corteanus Massee,	Marshallville, Ga.,	Agr.
Eugene Richard McCracken,	Graham,	M. E.
Charles McKimmon,	Raleigh,	Chem.
Charles Richard McManaway,	Charlotte,	M. E.
Roger Williams Montague,	Winston,	Tex.
Jacob O. Moose,	Mt. Pleasant,	E. E.
Robert Lee Morrison,	Concord,	C. E.
Joel William Moye,	Farmville,	Agr.
Albertus Pharr Murdock,	Statesville,	C. E.
Horace Moore Neal,	Monroe,	E. E.
James Caldwell Neal,	Charlotte, R. 8,	E. E.
William Shephard Nicholson,	Union, S. C.,	Tex.
Robert Andrew Patton,	Franklin,	Agr.
Fred Taylor Peden,	Wilkesboro,	Agr.
John Taylor Peden, Jr.,	Wilkesboro,	C. E.
Silas Bruce Phifer,	Cleveland, R. 2,	E. E.
Josephus Plummer Quinerly,	Grifton,	Agr.
Sherman Ramsey,	Statesville,	E. E.
Benjamin Smith Robertson, Jr.,	Haw River,	Tex.
John Wesley Rollinson,	Elizabeth City,	C. E.
George Romulus Ross,	Ashboro,	Agr.
Graeme William Ross,	Charlotte,	E. E.
DeBerniere Hooper Sanders,	Smithfield,	E. E.
Ira Short,	Boardman,	M. E.
Orin Morrow Sigmon,	Hickory,	M. E.
William Ruffin Smith,	Charlotte,	E. E.
Charlie Augustine Speas,	Cana, R. 2,	C. E.
Robert Leak Steele, Jr.,	Rockingham,	Tex.
Lucius Esek Steere, Jr.,	Charlotte,	E. E.
Marvin Merritt Stephenson,	Angier,	M. E.
William Shelburn Thomas,	Raleigh,	E. E.
Thomas Whitmell Thorne,	Littleton,	M. E.
Franklin Wood Thorp,	Rocky Mount,	Agr.

Name.	*Post-office.*	*Course.*
William Purcell Thurston,	Burlington,	C. E.
Fred Goode Tucker,	Henderson,	E. E.
Robert Terry Wade,	Morehead City,	C. E.
Edwin Wadsworth,	Charlotte,	E. E.
Edward Harvie Ward,	Tarboro,	C. E.
James Hunter Watson,	Raleigh,	Chem.
Nathaniel Sullivan Wilson, Jr.,	Winston,	Tex.
William Page Wilson,	Goldsboro,	Tex.
Walter Booker Winfree,	Wadesboro, R. 3,	Agr.
Marion Fuller Wyatt,	Raleigh,	C. E.

THE TWO-YEAR COURSES.

First Year.

John Howard Abernethy,	Stanley,	M. A.
Hiram Miller Armentrout,	High Point,	M. A.
William Benjamin Aycock,	Goldsboro,	App. E.
Claude Bernard Baker,	Hickory, R. 1,	App. E.
Bennie Frank Braddy,	Washington,	M. A.
Joe Windley Buchanan,	Roper,	M. A.
Don McD. Burgess,	High Point,	M. A.
Wm. Sumner Reddick Burwell,	Kittrell,	Tex.
Henry Duncan Cooke,	Haw River,	Tex.
James Horton Doughton,	Guilford College,	M. A.
Harry Falls,	Kings Mountain,	Tex.
Lawrence Bynum Farris,	Cherryville,	Tex.
Archie Boyd Fletcher,	Gibson,	M. A.
Emmett Elias Fulp,	Fulp,	Tex.
Eckie Haywood Gattis.	Raleigh,	App. E.
John Krause Gunn,	Tampa, Fla.,	App. E.
Willie James Hankins,	Spray,	Tex.
Henry McCombs Heath,	Matthews,	Tex.
John Jackson Hedrick,	Wilmington,	M. A.
Lary Tucker Hill,	Bosley,	Tex.
Thomas Greenwood Hill,	Louisburg,	App. E.
Carl Horn,	Rutherfordton, R. 3,	Tex.
Lester McAlwaine Jacobs,	New Bern,	App. E.
Andrew Jones,	Messic,	M. A.
Edgar Nelson Keller,	Kings Mountain,	Tex.
Winston Elijah Lawrence,	Raleigh, R. 4,	App. E.
Bascom Campbell Livingston,	Tryon,	M. A.
Nathaniel Rayborn Martin,	Danbury,	App. E.

Name.	*Post-office.*	*Course.*
Gorman McPhail,	Clinton, R. 5,	App. E.
Neill McQueen,	Fayetteville,	M. A.
Ronald Earl Mewborn,	Kinston,	M. A.
Charles Ernest Mills,	Mooresville,	App. E.
Andrew Weaver Moody,	East La Port,	M. A.
Nathaniel Street Munroe,	Goldsboro,	App. E.
Woodard Myers,	Charlotte,	M. A.
James Angus Niemyer,	Hamlet,	M. A.
William Owen Potter,	Cash Corner,	M. A.
Robert William Powell,	Goldsboro,	App. E.
Edward Alexander Robbins,	Charlotte, R. 2,	Tex.
Josiah Herbert Robertson,	Selma,	App. E.
John Leonidas Scott, Jr.,	Graham,	Tex.
David Walter Seifert,	Wilmington,	M. A.
Samuel Neill Smith,	Raleigh,	App. E.
Clarence Alexander Stedman,	Greensboro,	App. E.
William Augustus Stokely,	Elizabeth City, R. 1,	M. A.
William Perry Sugg,	Princeton,	M. A.
Thomas Johnson Summey,	Brevard,	M. A.
Grover Cleveland Tilley,	Rougemont,	M. A.
William Beverley Whitley,	Smithfield,	Tex.

Second Year.

Robert Daniel Bland,	Currie,	M. A.
Robert Graham Person,	Laurel,	M. A.
Hillary Dowdy Potter,	Cash Corner,	M. A.
James Richard Sugg,	Wilson,	App. E.

THE ONE-YEAR COURSE IN AGRICULTURE.

Neily Orman Alexander,	Matthews, R. 17,	Agr.
James Clark Archbell,	Washington,	Agr.
Edward Sidney Blount,*	Roper,	Agr.
John Frank Butler,	Hoffman,	Agr.
Archie Graham McLeod,	Raeford, R. 1,	Agr.
Lewis McKee Morrison,	Concord, R. 6,	Agr.
Bert Price,	Ellenboro,	Agr.
William Henry Pritchard,	Elizabeth City,	Agr.
George Park Robinson,*	Matthews,	Agr.
Arthur Sharpe,	Greensboro, R. 6,	Agr.
Frank Thomason,	Salisbury, R. 1,	Agr.

*Registered in Textile.

IRREGULAR.

Name.	*Post-office.*	*Course.*
Henry Ellison Trippe, Jr.,	Bonnerton,	Agr.
Wm. Herbert Doughty Banck,	Wilmington,	C. E.
John Boone,	Lumberton,	Agr.
Charles Lee Cruse,	Spencer,	Agr.
William Herbert Ellis,	Wilson,	Agr.
James Mill Gray,	Cullasaja,	Agr.
George Washington Hill,	Trinity,	Agr.
James Newton Lowrance,	Mooresville,	Agr.
Claude Lenoir Mast,	Valle Cruces,	Agr.
James Morgan Sherman,	Ash Grove, Va.,	Agr.
Claude Wood Thompson,	Elmwood,	Agr.
Joseph Tyson Ward,	Wilson,	Agr.
Fred Barnett Wheeler,	Archdale,	M. E.

SPECIAL.

Woodberry Lennon,	Lumberton,	C. E.
John Dixon Lineberger, Jr.,	Shelby,	Tex.
Charles Henry Maynor,	Graham,	M. E.
Cantwell Faulkner Muckenfuss,	Charleston, S. C.,	Agr.
Herbert Nathaniel Steed,	Steeds,	Tex.

WINTER COURSES.

Ofy Thompson Beasley,	Louisburg,	Agr.
Oscar Wells Cox,	Wilmington,	Agr.
Paul Kindred Drye,	Mt. Pleasant,	Tex.
James Mastin Fagg,	Red Shoals,	Agr.
Henry Edward Foxwell, Jr.,	Edenton,	Agr.
Roy Franklin Hartman,	Hartman,	Agr.
Thomas Hornaday,	Burlington, R. 10,	Agr.
Lovie Harris Hunter,	Charlotte,	Agr.
Shade Rufus Joines,	North Wilkesboro,	Agr.
Allen Henry Alexander Lee,	Dunn,	Agr.
J. Young Todd,	Due West, S. C.,	Agr.

ONE-WEEK COURSE IN AGRICULTURE.

Heflin Henry Batten,	Wendell,	Agr.
J. P. Chamblee,	Wakefield,	Agr.
Enoch Martin Dodson,	Pinnacle, R. 3,	Agr.
John Edmon Stone,	Pilot Mountain,	Agr.

MAY SCHOOL FOR TEACHERS.

Name.	*Post-office.*
Barnette William Allen,	Kittrell, N. C.
Rosa Ethel Barrow,	Raleigh, N. C.
Daisy Lee Bland,	Sanford, N. C.
Rose Bland,	Sanford, N. C.
Ernestine Nolier Booker,	Apex, N. C.
Martha Lizzie Eason,	Gatesville, N. C.
Lizzie Hodges,	Washington, N. C.
Luella H. Holloway,	Raleigh, N. C.
Kenneth H. McIntyre,	Carl, N. C.
Maggie Mae Mitchell,	Reidsville, N. C.
Tillie Goldie Ranes,	Wake Forest, N. C.
Emet Robinson,	Beaver Creek, N. C.
William Henry Wynne,	Winterville, N. C.

EIGHTEENTH ANNUAL COMMENCEMENT.

MAY 29, 1907.

Degrees Conferred.

BACHELORS OF AGRICULTURE.

JACOB TATUM EATON,
BENJAMIN BRYAN EVERETT,
LAWRENCE JAMES HERRING,
ALBERT CARL JONES,
LAFAYETTE FRANCK KOONCE,
JAMES ELWOOD OVERTON,
THOMAS FRANKLIN PARKER,
ARTHUR LEE PASCHALL,
JOHN ED. TURLINGTON,
EDMUND FARRISS WARD,
DAVID LYNDON WHITE.

BACHELORS OF SCIENCE.

In Industrial Chemistry.

LEWIS EDGAR LOUGEE,
HENRY KREIGER MCCONNELL,
HENRY STARBUCK MONTAGUE,
JAMES KEMP PLUMMER,
ARTHUR JOHN WILSON.

BACHELORS OF ENGINEERING.

In Civil Engineering.

HERBERT SCANDLIN BATTIE,
SEBA ELDRIDGE,
CLEMENT LEINSTER GARNER,
ROY JOSEPH GILL,
PHILIP WILLIAM HARDIE,
GUY FRANCIS HINSHAW,
OSCAR FRANKLIN MCNAIRY,
JOHN LIGHTFOOT MORSON,
GUY PINNER,
LEON JACOB SCHWAB,
VANCE SYKES,
LUTHER RUSSELL TILLETT,
JOHN JACKSON WELLS.

In Electrical Engineering.

JOE PITTMAN BIVENS,
CARNEY JOHN BRYAN,
LINDSAY FERGUSON CARLETON,
ROBERT HILL CARTER,
JOHN LINDSAY FERGUSON,
ELIAS VAN BUREN FOWLER,
ROBERT STRICKLER GRAVES,
GEORGE ROM HARDESTY,
JOKTAN LAFAYETTE HEMPHILL,
WILLIAM WHITMORE JONES,
FRANK CURTIS MICHAEL,
FRED MAYNARD PARKS,
JOHN OSCAR SHUFORD,
CECIL BERNARD WHITEHURST.

In Mechanical Engineering.

EUGENE FRANKLIN MEADOR,
BENNETT TAYLOR MIAL,
JOHN MAPLE MILLS,
WINSLOW GERALD PITMAN,
WILLIAM BROOKS TRUITT,
LINDSAY MARADE WEAVER.

In Textile Industry.

JOHN WASHINGTON CLARK, B.E.,
LOVIC RODGERS GILBERT.
WILLIAM NORMAN HOLT,

CIVIL ENGINEER.

GEORGE FREDERICK SYME, B.S.

HONORS.

HONORS IN SCHOLARSHIP.

For Four Years.

C. L. GARNER,
W. B. TRUITT,

FOR 1906-'07.

Senior Class.

S. ELDRIDGE,
C. L. GARNER,
H. K. MCCONNELL,
W. B. TRUITT.

Junior Class.

F. H. BROWN,
R. R. EAGLE,
M. L. EARGLE,
P. L. GAINEY,
D. Y. HAGAN,
H. W. KUEFFNER,
DAVID LINDSAY,
C. T. MARSH,
E. E. SMITH,
J. P. SPOON.
J. L. VONGLAHN.

Sophomore Class.

J. W. HARRELSON,
R. C. MASON.

Freshman Class.

L. P. MCLENDON,
C. E. WALTON.

First Year Mechanic Arts.

H. C. Clay.

HONORS FOR PUNCTUALITY.

E. V. Fowler,
R. J. Gill,
L. A. Higgins,
L. L. Hood,
L. F. Koonce,
D. Lindsay,
C. T. Marsh,
G. L. Miller,
L. D. Moody,
W. C. Pennington,
R. G. Person,
L. L. Pittman,
R. Poole,
T. M. Poyner,
J. T. Ward,
J. C. Williams.

FRESHMAN PRIZES FOR AGRICULTURAL LABOR.

First Prize, $10.00, ... L. A. Higgin
Second Prize, $5.00, ... G. W. Hill.

REGISTER OF ALUMNI.

CLASS OF 1893.

Name.	*Degree.*	*Address.*
Robert Wilson Allen,	B. E.,	Sanford, N. C.
Superintendent of Graded School.		
Samuel Erson Asbury,	B. S.,	College Station, Texas.
M. S. 1896. First Assistant State Chemist.		
Henry Emil Bonitz,	B. E.,	Wilmington, N. C.
Architect.		
Frank Fuller Floyd,	B. E.,	Knoxville, Tenn.
Jellico Coal Mining Co.		
Charles Duffy Francks,	B. E.,	Richlands, N. C.
Superintendent of Graded Schools.		
Edward Moore Gibbon,	B. E.,	Charlotte, N. C.
Civil Engineer The Engineering Company of America.		
George Pender Gray,	B. S.,	Montgomery, Ala.
Commercial Traveler Marks & Gayle.		
Charles Bolling Holladay,	B. E.,	Wilmington, Del.
Treasury Department The Dupont Co.		
William McNeill Lytch,	B. E.,	Laurinburg, N. C.
Superintendent Laurinburg Oil Co.		
James William McKoy,	B. E.,	Black Mountain, N. C.
Civil Engineer and Merchant.		
Walter Jerome Mathews,	B. E.,	Goldsboro, N. C.
Electrician and Chief Engineer for the Eastern N. C. Asylum for Insane.		
Frank Theophilus Meacham,	B. S.,	Statesville, N. C.
M. S. 1894. Superintendent State Test Farm.		
Carl DeWitt Sellars,	B. E.,	Greensboro, N. C.
Cone Export and Commission Co.		
Charles Edgar Seymour,*	B. S.,	Raleigh, N. C.
Farmer.		
Buxton Williams Thorne,	B. E.,	Holly Springs, Miss.
Cashier Peoples Bank.		
William Harrison Turner,	B. E.,	Winston-Salem, N. C.
Broker and Wholesale Dealer in Mill Feed and Grain.		

*Deceased.

It is the purpose of the College to keep in touch with the Alumni.
Please notify the Registrar promptly of any change in business or address.

CHARLES BURGESS WILLIAMS, B. S., West Raleigh, N. C.
M. S. 1896. Director of N. C. Experiment Station.

LOUIS THOMAS YARBROUGH, B. E., Raleigh, N. C.
Clerk Raleigh Post-office.

SAMUEL MARVIN YOUNG, B. E., Raleigh, N. C.
Salesman Richmond Hardware Co.

CLASS OF 1894.

CHARLES EDWARD CORPENING, B. E., Lenoir, N. C., R. F. D. 3.
Farmer and Dealer in Lumber.

DAVID COX, JR., B. E., Hertford, N. C.
County Surveyor; also in employ of Yeopim Lumber Co.

ROBERT DONNELL PATTERSON, B. S., Chase City, Va.
M. S. 1898. Cashier First State Bank.

CHARLES PEARSON, B. E., Summerville, S. C.
Civil Engineer.

ZEBBIE GEORGE ROGERS, B. E., Washington, D. C.
Inspector of Building Construction Baltimore and Ohio Railroad.

JOHN HYER SAUNDERS, B. E., Rocky Mount, N. C.
Locomotive Engineer Atlantic Coast Line Railway.

BENJAMIN FRANKLIN WALTON, B. S., Raleigh, N. C., R. F. D. 1.
Farmer.

JOHN MCCAMY WILSON, B. E., Spartanburg, S. C.
Secretary and General Manager of Russel-Compton Co.,
Founders and Machinists.

CLASS OF 1895.

THOMAS MARTIN ASHE* B. E., Raleigh, N. C.

JAMES ADRIAN BIZZELL, B. S., Ithaca, N. Y.
M. S. 1900. Ph. D. Cornell University. Chemist N. Y. State College of Agriculture.

JOHN ISHAM BLOUNT, B. E., Birmingham, Ala.
C. E. 1897. M. E. Cornell University. Owner Machinery Business of J. I. Blount & Co.

*Deceased.

Name. *Degree.* *Address.*

JAMES WASHINGTON BRAWLEY, B. S., Greensboro, N. C.
Superintendent of Agents Southern Life and Trust Co.

WILLIAM AUSTIN BULLOCK, B. S., Amsterdam, Ga.
General Superintendent of Tobacco Plantation A. Cohn & Co.

DAVID CLARK, B. E., Jonesboro, N. C.
M. E. 1896, C. E. 1897. M. E. Cornell University 1898. President Eugenia Manufacturing Co., also Clark Manufacturing Co.

GEORGE WASHINGTON CORBETT, JR., B. E., Currie, N. C., R. F. D. 2.
Of firm of Corbett & Corbett, Manufacturers of Lumber.

EDWIN SPEIGHT DARDEN, B. S., Wilson, N. C.
Bookkeeper Clark, Jones & Bass.

WILLIAM KEARNEY DAVIS, JR., B. E., Marion, S. C.
Superintendent Cotton Mills.

JOSEPH CHARLES DEY, B. S., Norfolk, Va.
Produce Broker.

LEE BORDEN ENNETT, B. S., Cedar Point, N. C.
Farmer and County Superintendent of Schools.

ISAAC HENRY FAUST, B. E., Norlina, N. C.
Secretary and Treasurer Lewis Lumber Co.

CHARLES WILLIS GOLD, B. S., Raleigh, N. C.
Secretary and Superintendent of Agencies of the Jefferson Standard Life Insurance Co.

WILLIAM HENRY HARRISS, B. E., Atlanta, Ga.
B. S. 1895, M. E. 1896. Pres. and Gen. Mgr. Bellevue Mills Co., Pres. and Gen. Mgr. Harriss Mfg. Co., Gen. Mgr. Hamilton-Corborlt Cotton Mills.

CHRISTOPHER MILLER HUGHES, B. E., Fayetteville, N. C.
B. S. 1899. Lumber Business with W. J. McDiarmid & Co.

MALCOLM BEALL HUNTER, B. E., Cambridge, Penn.
Philadelphia Bell Telephone Co.

SAMUEL CHRISTOPHER MCKEOWN, B. E., Sumter, S. C.
The Sumter Telephone Manufacturing Co.

MANN CABE PATTERSON, B. E., Durham, N. C.
Machinist American Tobacco Co.

ABRAM HINMAN PRINCE, B. S., San Augustine, Texas.
Farmer.

CHARLES MARCELLUS PRITCHETT, M. E., Charlotte, N. C.
C. E. 1896. Engineer.

VICTOR VASHTI PRIVOTT, B. E., Sanford, N. C.
Chief Engineer and Machinist Sanford Cotton Mill.

Name.	*Degree.*	*Address.*

HOWARD WISWALL, JR., B. E., Marion, S. C.
Johnson & Wiswall, Civil Engineers.

CHARLES GARRETT YARBROUGH, B. E., Chicago, Ill.
Constructing Engineer Western Electric and Manufacturing Co.

CLASS OF 1896.

DANIEL ALLEN, B. S., Raleigh, N. C.
Traveling Salesman.

GEORGE STRONACH FRAPS, B. S., College Station, Texas.
Ph. D. Johns Hopkins University. State Chemist and Chemist Texas Experiment Station.

MARION JACKSON GREEN, B. S., Charlotte, N. C.
Pattern Maker Cole Manufacturing Co.

JOHN HOWARD, B. S., Middleboro, Ky.
Treas. and Gen. Mgr. Rossland Coal Co., Pres. Black Hawk Coal Co.

WILLIAM COLBERT JACKSON, B. S., Ayden, N. C.
Vice-President J. R. Smith Mercantile Co.

ROBERT GRAHAM MEWBORNE, B. S., Louisville, Ky.
Chemist Kentucky Tobacco Product Co.

LEVI ROMULUS WHITTED, B. S., Washington, D. C.
C. E. 1897. Structural Engineer U. S. Treasury Department.

HENRY LLOYD WILLIAMS, B. S., Cofield, N. C.
Manager of Saw Mill, Cofield Manufacturing Co.

CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE, B. S., Garner, N. C.
M. D. Baltimore Medical College. Physician.

JOHN WILLIAM CARROLL, B. S., Wallace, N. C.
M. D. University of Maryland 1903. Physician.

CHARLES EDWARD CLARK, B. S., Charlotte, N. C.
Market Gardener and Supt. of the Farmers' Co-operative Demonstration Work in Mecklenburg County, U. S. Department of Agriculture.

WM. ALEXANDER GRAHAM CLARK, B. S., Jonesboro, N. C.
M. E. Cornell University. Special Agent Dept. of Commerce and Labor, U. S. A., to visit Hawaii, Japan, China, India, Egypt and Turkey.

NICHOLAS LOUIS GIBBON, B. S., Biddeford, Me.
Mill Engineer Saco & Pettee Machine Shops.

Name.	*Degree.*	*Address.*

EBURN DODD HARRIS, B. S., Raleigh, N. C.
A. M. Cornell University. Assistant Chemist and Microscopist N. C. Department of Agriculture.

ERE EUSTIS HIGHSMITH, B. S., Parkersburg, N. C.
Farmer.

LYDE BENNETT KENDALL, B. S., Washington, D. C.
Assistant Topographer U. S. Geological Survey.

YDNEY GUSTAVUS KENNEDY, B. S., Sanford, Fla.
With Atlantic Coast Line Railroad Company.

OSEPH LAWRENCE KNIGHT, B. S., Dewey, Fla.
Turpentine Operator Dewey Co.

ALTER JONES MCLENDON, JR., B. S., Marshall, N. C.
President and General Manager Capitola Manufacturing Co.

EPTON HALL MERRITT, B. S., Raleigh, N. C.
Secretary and Treasurer Powell & Powell (Incorporated).

LBERT HICKS OLIVER, B. S., Eastover, S. C.
Manager of Goodwill Plantation.

HUGH WILLIAMS PRIMROSE,* B. S., Raleigh, N. C.
M. S. 1900.

WILLIS HUNTER SANDERS, B. S., Roanoke Rapids, N. C.
Superintendent of Power Plants Roanoke Navigation and Water-power Co.

THOMAS JEHU SMITHWICK, Mt. Airy, N. C.
Chief Engineer and Electrician N. C. Granite Corporation.

JORDAN LEA WATSON, B. S., Atlanta, Ga.
Salesman Allis-Chalmers Co.

BRADLEY JEWETT WOOTTEN,* B. S., Wilmington, N. C.
Lieutenant United States Army.

CLASS OF 1898.

DORSEY FROST ASBURY, B. S., Washington, D. C.
Draftsman Naval Gun Factory.

SIDNEY HAMILTON BECK, B. S., Washington, D. C.
Marine Engineer Navy Department.

ANSON ELIKEM COHOON, B. S., Portland, Oregon.
Forest Service U. S. Department of Agriculture.

HUGH MCCULLOM CURRAN, B. S., Washington, D. C.
Forest Service U. S. Department of Agriculture.

*Deceased.

Name.	*Degree.*	*Address.*

BENJAMIN CAREY FENNELL, B. S., Atlanta, Ga.
M. E. 1900. Manager Southern Office American Blower Co.

ALPHEUS ROUNTREE KENNEDY, B. S., Quincy, Mass.
Draftsman Fore River Shipbuilding Co.

FREDERICK CREECY LAMB, B. S., El Paso, Texas.
City Chemist and Bacteriologist.

EDWIN BENTLEY OWEN, B. S., West Raleigh, N. C.
Registrar North Carolina College of Agriculture and Mechanic Arts.

B. MOORE PARKER, B. S., West Raleigh, N. C.
Assistant Professor of Carding and Spinning, North Carolina College Agriculture and Mechanic Arts.

NUMA REID STANSEL, B. S., Omaha, Neb.
Mechanical and Electrical Engineer Treasury Department.

TEISAKU SUGISHITA, B. S., Kokufu, Japan.
Civil Engineer.

GEORGE FREDERICK SYME, B. S., Raleigh, N. C.
C. E. 1907. South and Western Railway, Church Hill, Tenn.

CLASS OF 1899.

WM. DAVIDSON ALEXANDER, JR., B. S., High Point, N. C.
Superintendent of Public Works City of High Point.

IRA WILSON BARBER, B. S., Mt. Airy, N. C.
Superintendent Electric Light and Power Plant and Water-works.

JOHN HENDERSON BIRDSONG, B. S., Chicago, Ill.
Chief Chemist The National Malleable Castings Co.

FRANCIS MARION FOY,* B. S., Scott's Hill, N. C.

ALBERT SIDNEY LYON, B. S., Rocky Mount, N. C.
Superintendent Public Works City of Rocky Mount.

CARROLL LAMB MANN, B. S., C. E., West Raleigh, N. C.
Civil Engineer and Instructor in Civil Engineering N. C. College of Agriculture and Mechanic Arts.

O'KELLY W. MYERS, B. S., Mantazilla, P. I.
Civil Service.

EUGENE LEROY PARKER, B. S., Mt. Pleasant, Tenn.
Analytical and Consulting Chemist E. L. Parker & Co.

EUGENE GRAY PERSON, B. S., Macon, Ga.
Bookkeeper Bibb Manufacturing Co.

*Deceased.

Name. *Degree.* *Address.*

FREDERICK ERASTUS SLOAN, B. S., Raleigh, N. C.
District Agent The Security Life and Annuity Co., of Greensboro, N. C.

ANDREW THOMAS SMITH, B. S., Camden, N. J.
Draftsman in charge New York Shipbuilding Co.

ALEXIS PRESTON STEELE, B. S., Statesville, N. C.
Mechanical Engineer J. C. Steele & Sons.

WILLIAM ANDERSON SYME, B. S., Raleigh, N. C.
M. S. 1903. Ph. D. Johns Hopkins 1906. Assistant Chemist N. C. Experiment Station.

HUGH WARE, B. S., Birmingham, Ala.
Chemist Decatur Car Wheel and Manufacturing Co.

CLAUDE B. WILLIAMS, B. S., Elizabeth City, N. C.
M. D. University College of Medicine 1903. Physician.

CLASS OF 1900.

KEMP ALEXANDER, B. E., Lexington, N. C.
Superintendent Yadkin Knitting Mills Co.

LESLIE LYLE ALLEN, B. E., Ensley, Ala.
Superintending construction Tennessee Coal, Iron and Railroad Co.

ROBERT LINN BERNHARDT, B. S., Salisbury, N. C.
Bookkeeper Salisbury Hardwood and Furniture Co.

LESLIE GRAHAM BERRY, B. E., 6th Ave., Des Moines, Iowa.
Contracting Engineer.

JAMES HARRY BUNN, B. E., Henderson, N. C.
Assistant Secretary Henderson Cotton Mill.

SAMUEL MERRILL HANFF, B. S., Duke, N. C.
Episcopal Minister.

GEORGE ROLAND HARRELL, B. S., Grasselli, N. J.
Manufacturing Foreman The Grasselli Chemical Co.

HENRY ALLEN HUGGINS, B. S., Wilmington, N. C.
Bookkeeper George W. Huggins.

GARLAND JONES, JR., B. S., Fort Worth, Texas.
Chemist Armour & Co.

LOUIS HENRY MANN, B. E., Washington, N. C.
D. D. S. University of Maryland 1904. Dentist.

ROBERT HALL MORRISON, B. E., Stanley, N. C.
President Mariposa Cotton Mills.

WILLIAM MONTGOMERY PERSON, B. E., Sparrow's Point, Md.
Superintendent of Coke Ovens.

Name.	*Degree.*	*Address.*

JUNIUS EDWARD PORTER, B. E., Portsmouth, Va.
Assistant Engineer A. C. L. Railway Co. Home address, Emerson, N. C.

ROGER FRANCIS RICHARDSON, B. E., Box 759, Ensley, Ala.
Construction Engineer Tennessee Coal, Iron and Railroad Co.

WILLIAM EDWIN ROSE, B. E., Newport News, Va.
Draftsman Newport News Steamship and Dry Dock Co.

FLOYD DE ROSS, B. E., W. Ave., Charlotte, N. C.
Traveling Salesman Fostoria Incandescent Lamp Co.

IRA OBED SCHAUB, B. S., Ames, Iowa.
Assistant Professor of Soils Iowa Agricultural College.

JOHN WADE SHORE, B. S., Boonville, N. C.
Teacher and Farmer.

WILLIAM TURNER SMITH, B. E., Dublin, Ga.
Secretary and Treasurer Georgia Hydraulic Stone Co.

SOLOMON ALEXANDER VEST, B. S. 1900, B. Agr. 1901, Rocksdale, Tenn.
Analytical Chemist in employ of F. G. Smith, Propr. of Vest Laboratory.

ROSCOE MARVIN WAGSTAFF, B. E., Newport News, Va.
Draftsman with Newport News Shipbuilding and Dry Dock Co.

GAITHER HALL WHITING,* B. S., Richmond, Va.
Assistant Chemist Virginia-Carolina Chemical Co.

CLASS OF 1901.

FLETCHER HESS BARNHARDT, B. E., Phoenixville, Pa.
Structural Engineer with Phoenix Bridge Co.

WILLIAM OSBORNE BENNETT, B. E., Wadesboro, N. C.
Manager South Atlantic Oil Co.

FRED WILHELM BONITZ, B. E., Wilmington, N. C.
Attorney-at-Law.

ZOLLY MOSBY BOWDEN, B. E., Mulberry, Fla.
Electrician Prairie Pebble Phosphate Co.

BEDFORD JETHRO BROWN, B. E., Charlotte, N. C.
Meter Expert Southern Power Co.

PAUL COLLINS, B. S., Nashville, Tenn.
Assistant Chemist L. P. Brown & Co.

WILLIAM PESCUD CRAIGE, B. S., New Orleans, La.
With Peter F. Pescud, Underwriter.

WILLIAM LOIS CRAVEN, B. E., York, Pa.
Draftsman York Bridge Co.

*Deceased.

Name. *Degree.* *Address.*

FELIX GRAY CRUTCHFIELD, B. E., Winston-Salem, N. C.
Foreman Chatham Manufacturing Co.

GEORGE MASLIN DAVIS, B. E., Winston-Salem, N. C.
Chief Draftsman Southbound Railway Co.; also General Manager Winston Tag Machine Co.

WILLIAM DOLLISON FAUCETTE, B. E., Portsmouth, Va.
Assistant Civil Engineer Seaboard Air Line Railway.

BENJAMIN OLIVER HOOD, B. E., Canonsburg, Pa.
Structural Draftsman Fort Pitt Bridge Works.

MARTIN KELLOGG, B. Agr., Gatesville, N. C.
Register of Deeds of Gates County.

JESSE JULIAN LILES, B. E., Pittsburg, Pa.
Salesman General Electric Co.

LEWIS OMER LOUGEE, B. E., Pittsburg, Pa.
Of the firm of George S. Baton & Co., Civil and Mining Engineers.

CHARLES HARDEN MCQUEEN, B. E., Winston-Salem, N. C.
Civil Engineer with J. L. Ludlow, C. E.

WILLIAM FRANKLIN PATE, B. S., Wooster, Ohio.
Assistant Chemist Agricultural Experiment Station.

EDWARD OSCAR SMITH, B. E., Newport News, Va.
Special Draftsman Newport News Shipbuilding and Dry Dock Co.

WALTER STEPHEN STURGILL, B. E., Fort D. A. Russell, Wyo.
First Lieutenant Second Field Artillery, United States Army.

BEVERLY NATHAN SULLIVAN, B. S., Winston-Salem, N. C.
Superintendent Winston-Salem Light and Fuel Co.

CHARLES AUGUSTUS WATSON, B. S., Atlanta, Ga.
With Berlin Aniline Works.

BENJAMIN VADEN WRIGHT, B. E., Globe, Arizona.
Assistant Engineer G. V. G. & N. Railroad Co.

CLASS OF 1902.

WILLIAM DAVID BOSEMAN, B. E., Rocky Mount, N. C.
Farmer.

JUNIUS SIDNEY CATES, B. S., Washington, D. C.
M. Agr. 1904. U. S. Department of Agriculture.

ROBERT BAXTER COCHRAN, B. E., Urbana, Ohio.
Electrical Engineer.

JAMES LUMSDEN FEREBEE, B. E., Wilmington, Del.
Assistant Engineer Water Department.

Name.	*Degree.*	*Address.*

ROBERT IRVING HOWARD, B. E., Greenville, N. C.
Assistant Cashier The Bank of Greenville.

JOHN LUTHER MCKIMMON, B. Agr., Laurinburg, N. C.
Farmer.

LAURIE MOSELEY, B. E., Greensboro, N. C.
Southern Representative Owego Bridge Co.

VASSAR YOUNG MOSS, B. E., Canonsburg, Pa.
Structural Draftsman Fort Pitt Bridge Works.

CHARLES ARTHUR NICHOLS, B. E., Muscogee, Indian Ter.
Merchant.

JAMES LAFAYETTE PARKER, B. E., 116 Nassau St., New York.
Assistant Engineer H. C. Keith, Consulting Engineer.

WILLIAM BENEDICT REINHARDT, B. E., Dawson, Y. T.
Electrician Dawson Electric Light and Power Co.. Ltd.

RUSSELL ELSTNER SNOWDEN, B. E., Lynchburg, Va.
Assistant Civil Engineer Southern Railway, Lynchburg, Va.
Home address, Snowden, N. C.

JOSEPH PLATT TURNER, B. E., Spray, N. C.
Superintendent of Cotton Mill.

CLEVELAND DOUGLAS WELCH, B. E., Gastonia, N. C.
Luray Cotton Mills.

CLASS OF 1903.

WILLIAM MORTON BOGART, B. E., Charlotte, N. C.
Draftsman General Fire Extinguisher Co.

LESLIE NORWOOD BONEY, B. E., Wallace N. C.
Cashier Bank of Wallace.

JOHN SAMUEL P. CARPENTER, B. E., Cherryville, N. C.
Superintendent Cherryville Mfg. Co. and Melville Mfg. Co.

WALTER CLARK, JR., B. E., Raleigh, N. C.
Lawyer.

JOHN ELIOT COIT, B. Agr., Tucson, Arizona.
Ph. D. Cornell University. Horticulturist Arizona Experiment Station.

SUMMEY CROUSE CORNWELL, B. E., Dallas, N. C.
Civil Engineer in charge highway construction Gaston County.

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LOLA ALEXANDER NIVEN,	B. Agr.,	Ithaca, N. Y.
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THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1908-1909.

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1909.

CALENDAR.

1909.

JANUARY.

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COLLEGE CALENDAR.

1909.

Thursday,	July	8,	Entrance examination at each county courthouse, 10 A. M.
Wednesday,	September	1,	Entrance examination at the College, 9 A. M.
Thursday,	September	2,	First Term begins; Registration Day.
Thursday,	November	25,	Thanksgiving Day.
Wednesday,	December	22,	First Term ends.

1910.

Wednesday,	January	5,	Second Term begins; Registration Day.
Saturday,	March	19,	Second Term ends.
Monday,	March	21,	Third Term begins.
Sunday,	May	29,	Baccalaureate Sermon.
Monday,	May	30,	Alumni Day. Annual Oration.
Tuesday,	May	31,	Commencement Day.

BOARD OF TRUSTEES.

Name.	*Post Office.*	*Term Expires.*
C. W. Gold	Raleigh	May 1, 1911.
E. M. Koonce	Jacksonville	May 1, 1911.
T. W. Blount	Roper	May 1, 1911.
D. A. Tompkins	Charlotte	May 1, 1911.
J. T. Ellington	Smithfield	May 1, 1913.
W. E. Daniel	Weldon	May 1, 1913.
W. H. Ragan	High Point	May 1, 1913.
W. B. Cooper	Wilmington	May 1, 1913.
M. B. Stickley	Concord	May 1, 1915.
T. T. Ballenger	Tryon	May 1, 1915.
N. B. Broughton	Raleigh	May 1, 1915.
O. L. Clark	Clarkton	May 1, 1915.
Everett Thompson	Elizabeth City	May 1, 1917.
R. H. Ricks	Rocky Mount	May 1, 1917.
O. Max Gardner	Shelby	May 1, 1917.
Locke Craig	Asheville	May 1, 1917.

FACULTY.

DANIEL HARVEY HILL, A.M., Lit.D., President.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Vice President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.

ROBERT E. LEE YATES, A.M., Professor of Mathematics.

THOMAS NELSON, Professor of Textile Industry.

JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.

CLIFFORD LEWIS NEWMAN, M.S., Professor of Agriculture.

JOHN MICHELS, B.S.A., M.S., Professor of Dairying and Animal Husbandry.

WILLIAM HAND BROWNE, Jr., A.B., Professor of Physics and Electrical Engineering.

HOWARD ERNEST SATTERFIELD, B.S. in M.E., Professor of Mechanical Engineering.

THOMAS PERRIN HARRISON, Ph.D., Professor of English.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Professor of Veterinary Science and Physiology.

HENRY C. WALTER, B.S., Acting Professor of Physics and Electrical Engineering.

FRANK C. REIMER, M.S., Associate Professor of Horticulture.

BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Assistant Professor of Chemistry.

CHARLES BENJAMIN PARK, Instructor in Machine Shop and Assistant in Power Plant.

CARROLL LAMB MANN, B.S., C.E., Instructor in Civil Engineering.

GEORGE SUMMEY, Jr., Ph.D., Instructor in English.

CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.

ALFRED HENRY THIESSEN, B.S., Section Director United States Weather Bureau, Instructor in Meteorology.

JOHN STRAUCHON JEFFREY, Instructor in Poultry Husbandry.

ABRAHAM RUDY, A.M., Pd.D., Instructor in Modern Languages.

RALPH INGRAM SMITH, B.S., Instructor in Zoology and Entomology.

WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.

JOHN ALSEY PARK, B.E., Instructor in Mathematics.

MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.

LILLIAN LEE VAUGHAN, B.E., Instructor in Drawing and Mechanics.

CARL PHILIP BONN, B.A., Instructor in English.

VANCE SYKES, B.E., Instructor in Mathematics and Civil Engineering.

WELDON THOMPSON ELLIS, B.E., M.E., Instructor in Machine Design and Steam Laboratory.

LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D., Instructor in Chemistry.

JOHN WORTHINGTON DORSEY, E.E., Instructor in Electrical Engineering.

JOHN EDWARD HALSTEAD, B.S., Instructor in Dyeing.

HUBERT HILL, B.S., M.S., Instructor in Chemistry.

WILLIAM BROOKS TRUITT, B.E., Instructor in Physics.

JOHN LAWRENCE VON GLAHN, B.E., Instructor in Mathematics and Civil Engineering.

JESSE PAGE SPOON, B.Agr., Laboratory Assistant in Anatomy and Physiology.

JOHN GALENTINE HALL, A.M., Instructor in Biology.

PERCY LEIGH GAINEY, B.Agr., Assistant in Bacteriology.

HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.

FRED BARNET WHEELER, Instructor in Forge.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar.

ARTHUR FINN BOWEN, Bursar.

BENJAMIN SMITH SKINNER, Farm Superintendent.

JAMES OLIVER LOFTIN, Steward.

Miss ELSIE LANIER STOCKARD, Librarian.

Mrs. DAISY LEWIS, Hospital Matron.

Miss ISABELLA WILLIS PESCUD, Stenographer.

HENRY McKEE TUCKER, M.D., Physician.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION DEPARTMENT, WEST RALEIGH.

DANIEL HARVEY HILL, A.M., Lit.D., President.

CHARLES BURGESS WILLIAMS, M.S., Director and Agronomist.

WILLIAM ALPHONSO WITHERS, A.M., Chemist.

FRANK LINCOLN STEVENS, Ph.D., Vegetable Pathologist.

JOHN STRAUCHON JEFFREY, Poultryman,

FRANK CHARLES REIMER, M.S., Horticulturist.

ROBERT SETH CURTIS, B.S.A., Animal Husbandman.

JOHN MICHELS, M.S.A., Dairy Husbandman.

RALPH INGRAM SMITH, B.S., Entomologist.

GUY ALEXANDER ROBERTS, D.V.S., Veterinarian.

WILLIAM ANDERSON SYME, Ph.D., Assistant Chemist.

JOHN GALENTINE HALL, A.M., Assistant in Plant Diseases.

WILLIAM CARLYLE ETHERIDGE, B.Agr., Assistant in Farm Crops.

JAMES KEMP PLUMMER, B.S., Assistant Chemist.

PERCY LEIGH GAINEY, B.Agr., Assistant Bacteriologist.

A. R. RUSSELL, Assistant in Field Experiments.

ARTHUR FINN BOWEN, Bursar.

CRAVEN PEARCE FRANKLIN, Secretary and Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

First Lieutenant JOHN S. E. YOUNG, U. S. Army.

Cadet Major.

H. N. SUMNER.

Battalion Staff.

T. M. CLARK, Captain and Adjutant.
W. F. MORRIS, Captain and Quartermaster.

Noncommissioned Staff.

S. H. McNEELY, Sergeant Major.
T. D. HARRIS, Color Sergeant.

Band.

T. F. HAYWOOD, Captain.
W. R. MARSHALL, First Lieutenant.
J. H. ROBERTSON, Second Lieutenant.
R. J. WYATT, Drum Major.
W. E. DAVIS, First Sergeant.
I. N. TULL, Sergeant.
C. E. WALTON, Sergeant.
W. R. PHILLIPS, Sergeant.
O. M. SIGMON, Corporal.
J. W. ROLLINSON, Corporal.
G. R. ROSS, Corporal.
L. E. STEERE, Corporal.
R. T. WADE, Corporal.

Company A.

J. W. HARRELSON, Captain.
J. E. LATHAM, First Lieutenant.
W. N. SLOAN, Second Lieutenant.
H. S. STEELE, Second Lieutenant.
T. B. SUMMERLIN, First Sergeant.
J. C. ALBRIGHT, Sergeant.
H. C. CLAY, Sergeant.
W. L. MANNING, Sergeant.
L. D. MOODY, Sergeant.
W. H. DAVIS, Corporal.
J. L. MARTIN, Corporal.
K. BRYAN, Corporal.
W. P. THURSTON, Corporal.
F. T. PEDEN, Corporal.
W. J. HALL, Corporal.

Company B.

R. A. SHOPE, Captain.
W. S. DEAN, First Lieutenant.
W. M. MILLNER, Second Lieutenant.
R. R. FAISON, Second Lieutenant.
J. F. ROBINSON, First Sergeant.
J. B. PARKS, Sergeant.
L. L. HOOD, Sergeant.
T. S. BOND, Sergeant.
M. S. MAYES, Sergeant.
J. L. SPRINGS, Sergeant.
N. R. MARTIN, Corporal.
E. JOHNSTON, Corporal.
J. P. QUINERLY, Corporal.
G. W. GILLETTE, Corporal.
T. W. THORNE, Corporal.
F. G. TUCKER, Corporal.

Company C.

J. M. PRICE, Captain.
J. W. IVEY, First Lieutenant.
J. B. CRAVEN, Second Lieutenant.
J. E. TOOMER, Second Lieutenant.
L. P. McLENDON, First Sergeant.
R. L. MORGAN, Sergeant.
R. E. GILL, Sergeant.
T. H. THOMPSON, Sergeant.
H. W. WELLES, Sergeant.
W. M. NEALE, Sergeant.
W. BAILEY, Corporal.
J. M. BEAL, Corporal.
R. S. FAIRLY, Corporal.
M. F. WYATT, Corporal.

Company D.

W. A. HORNADAY, Captain.
J. G. PASCHAL, First Lieutenant.
J. M. PARKER, Second Lieutenant.
C. R. JORDAN, First Sergeant.
E. L. WINSLOW, Sergeant.
E. A. SEIDENSPINNER, Sergeant.
R. BOWDITCH, Sergeant.
C. R. BRADLEY, Sergeant.
J. W. BUCHANAN, Corporal.
R. BOYLAN, Corporal.
R. L. MORRISON, Corporal.
S. B. PHIFER, Corporal.

NOTE.—On October 14, 1908, the Battalion held a competitive drill on the Fair Grounds track, during the State Fair, and Company C, Corps of Cadets, was selected as the best drilled organization and awarded the College pennant.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890 and the "Nelson Act" of 1907 and by State appropriations.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and eighty-five acres of land. Fourteen hundred young trees and nine hundred and forty vines are growing in an orchard of sixteen acres. Seven acres are devoted to truck growing. The herd consists of thirty-eight cows, twenty-seven calves, and two pure-bred Jersey bulls. The laboratories, drawing-rooms, and workshops are well equipped for practical work.

BUILDINGS.

The Administration Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation-rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall was named in honor of the late R. Stanhope Pullen, the greatest benefactor of the College. The basement of this building is used as a dining room and seats five hundred students. The first story is used for library, reading room and lecture rooms. The second story serves as the College auditorium. This building is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is two hundred and four by seventy-four feet. The lower or basement floor contains the class rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making, stock judging, farm butchering, and cold-storage accommodations for the products.

The second floor contains the offices of the department, class rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery.

On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class rooms and large, well-lighted laboratories.

The building affords excellent accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

The Electric Laboratory is a one-story brick building. It is equipped with modern electrical apparatus to which large additions will be made.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated by steam. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

Foundry.—The old boiler house has been fitted up for foundry purposes. It contains a 36-inch cupola furnace, Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven; benches and hand tools for moulding in the course of exercises, as well as for any repair work for the College.

The Barn is a frame building carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

The New Power Plant furnishes heat, light, and power for all the buildings. The boiler plant consists of two 75-horse-power Babcock and Wilcox Company and two 100-horse-power Atlas Water-Tube Boilers, with a working steam pressure of 150 pounds. The Engine Plant consists of a 100-horse-power Skinner Engine and Crocker-Wheeler Generator attached; a 100 K. W. De Laval Turbine Generator set with self-exciter; a 10 K. W. steam-driven Exciter Set, Steam, and Vacuum Pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren Webster system of heating.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the

General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the Agricultural Building and the laboratories are in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal

education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week or month.

Students cannot properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette-smoking, drinking, gambling, card-playing, visiting pool-rooms and all improper places, loafing on the streets, and other like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; his failure to perform duty and his infractions of the rules. When this record shows that a young man is not in College for the purpose of getting an education, and is not using his opportunities properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed. The rules of the College are intended solely to promote manliness, to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the students in the Freshman Class who earn the largest and the next largest amounts of money by labor on the College farm.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

To the Junior Mechanical Student who has made the most progress in Mechanical Drawing the Mechanical Department gives a set of high-grade drawing instruments.

Mr. William Dunn, of New Bern, North Carolina, gives annually a twenty-five-dollar gold medal to the Senior speaker who makes the best oration on Commencement Day.

DISCIPLINE.

The discipline is intended to secure studious habits, with punctuality, system, and order in the performance of all duties. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform school, and it will not retain young men who are vicious, idle, or incompetent.

HAZING.

There has been no hazing of any sort in College this year. The present sentiment of the student body is opposed to this practice in our College, and its management feels sure that there will be no hazing during the next year.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization of the students, and is entirely under student management. A general secretary is employed by the association and devotes his entire time to the work. The members of the Faculty and the Board of Trustees are interested in the work and give assistance, both financially and otherwise. Any student who is a member of an evangelical church may become an active member. Any student of good moral character or who desires to improve his moral life may become an associate member.

The College Association is a branch of the International Association.

Two regular meetings of the association are held each week: one on Sunday evening and one on Wednesday. Musicians and speakers from Raleigh and other cities frequently take part in these services.

The purpose of the association is fourfold:

First, to build up Christian character and offer a suitable field for its development.

Second, to aid in keeping up the moral life of all the students in College.

Third, to train men in definite methods of Christian work, that they may be of the greatest service to their College and subsequently to their church and their country.

Fourth, to give moral young men such amusements and such good-fellowship as they need.

Bible study is systematically taken up by the association. Six or ten men are grouped into classes and meet regularly for Bible study. The leaders of these classes are trained for their teaching, and the entire work is under the supervision of the Bible Study Committee and the general secretary. Every student in College is urged to join one of these classes.

The association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership dues. Although membership is voluntary, it is desired that all students should apply for membership and thereby aid and be aided in an upright College life.

Plans are now under consideration for a fifteen-thousand dollar building to be fitted with every convenience for the association. This building will be the social center of College life. It will contain halls for the literary societies and for the Athletic Association as well as most comfortable quarters for the association.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practice in base-ball, foot-ball, track athletics, etc.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about six thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about ten thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meet-

ings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every two weeks for the discussion of mechanical subjects.

The Berzelius Chemical Society meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature, with which the College is well supplied.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the same examination as for the two-year course.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each courthouse in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1909 is July 8th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Wednesday preceding the opening day. The examinations begin with English at 9 A. M., in Room 21, Main Building, followed by Mathematics at 11, and History at 2, in the same room. The date for 1909 is September 1st.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.
2. School teachers holding teachers' certificates.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00.

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies is a matter largely to be determined by the parent.

The amount of such allowance should be kept within reasonable bounds. From $50.00 to $100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship, amount to from $275.00 to $325.00 for the entire session; or $230.00 to $280.00, if he has a scholarship.

The largest payment is made in September. A student on entering college should bring at least $60.00 to meet his various payments for the first month.

Students withdrawing from college within two weeks from date of entrance will be refunded all money paid by them to the College Bursar, except charges for board during the time here. Students withdrawing later than two weeks from date of entrance will be refunded no money except for board.

Board is $10.00 per month and is payable on the first day of each month from September to May inclusive; board for less time than one month is charged for at the rate of fifty cents a day or $3.00 per week.

The College Bursar is forbidden by the Trustees to give credit.

A more detailed statement of college fees is as follows:

The Bursar is instructed to collect from each student at the beginning of the session in September of each year the following amounts: Room rent, fuel and lights, $15.00; incidental fee, $5.00; medical fee, $3.00; lecture fee, $1.00; library fee, $1.00; furniture fee, $1.00; physical culture fee, $1.00; fee to cover damage to guns issued to cadets, $5.00; board for September, $10.00. Total $42.00.

Day students pay in full for half year on entering.

In addition to the above each student will be required to purchase a uniform, costing $18.00. Five dollars of this must be paid when measure is taken, and the balance when the uniform is delivered, which will be by the last of September.

In addition to the above, the following Department fees will be paid to the Bursar at the same time:

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students--	$ 10.00	$ 1.00	$ 4.00	$ 1.00	$----------	$ 1.00
C. E. " --	1.00	1.00	4.00	3.00	----------	----------
M. E. " --	2.00	2.00	6.00	3.00	2.00	2.00
E. E. " --	3.00	3.00	6.00	3.00	----------	----------
Chem. " --	10.00	6.00	4.00	3.00	----------	----------
Tex. " --	9.00	8.00	8.00	4.00	7.00	7.00

The Bursar will collect from each pay student by November first of each year tuition for half the session (amount $22.50).

The following are the January payments (without scholarship): room rent, fuel and lights, $15.00; tuition (half session), $22.50; furniture fee, $1.00; medical fee, $3.00; physical culture fee, $1.00; board for January, $10.00. Total, $52.50.

The amount required of students with scholarships is the same as above, less $22.50, or $30.00.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillowcases, one pillow and two bedspreads for single bed.

UNIFORM.

The College uniform must be worn while on military duty by all students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home, or purchased in the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $2,652.33.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillowcases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 3 o'clock P. M., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

COURSES OF INSTRUCTION.

The College offers the following courses of instruction:

I. Four-year Courses:

1st. **Agriculture** (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, and Industrial Chemistry).

3d. **Textile Industry** or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate in the four-year course in Agriculture, in Chemistry, or in Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. Short Courses of one year in Agriculture, and of two years in Textile Industry, in the Mechanic Arts (including Carpentry, Woodturning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. Winter Courses in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting seven weeks. A one-week's course in Agriculture, beginning with the opening of the Winter Term.

IV. Normal Courses for the training of teachers along industrial lines.

V. Graduate Courses, extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

SCHOOL OF AGRICULTURE.

I. The Four-year Course in Agriculture.
Ia. The One-year Course in Agriculture.
Ib. The Seven-weeks Course in Agriculture and Dairying.
Ic. The One-week Course.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

I. The Four-year Course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of such studies as Mathematics, English Literature, Physics, etc., and they are not neglected in this course. *Full description of the Four-year Course begins on page* 29.

Ia. The One-year Course is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course. *The One-year Course is described on page* 46.

Ib. The Seven-weeks Winter Course is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention. *The Seven-weeks Course is described on page* 48.

Ic. The One-week Course precedes the seven-weeks course and is devoted entirely to the study of cotton, from the preparation of the soil to the marketing of the crop. Emphasis is given soil preparation, rotation, fertilization, cultivation, seed selection, insect pests, diseases, etc.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices on yield and on fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

I. Four-year Course in Agriculture.

This course leads to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Breeds of Live-stock, 10†	2	--	--
Dairying, 22	--	--	5
Fruit Culture, 42	5	--	--
Vegetable Gardening, 43	--	5	--
Botany, Elementary, 55	3	3	3
Animal Physiology, 33	2	4	4
Algebra, 84	5	3	--
Geometry, 85	--	2	5
English, 87	3	3	3
Military Drill, 99	3	3	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

Drawing, 80	2	2	--
Woodwork, 82	--	2	2
Animal-breeding, 12	--	3	--
Stock-feeding, 14	--	--	4
Poultry Husbandry, 29	--	--	3
Plant Diseases, 57	3	--	--
Systematic Botany, 56	--	--	3
Zoology, 64	4	--	--
Economic Entomology, 65	--	3	--
Inorganic Chemistry, 70	3	3	3
Inorganic Chemistry (laboratory), 71	2	2	2
Physics, 78	2	2	2
American Literature, 88	3	3	3
Military Drill, 99	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment, 1	4	--	--
Farm Crops, 3	--	2	5
Stock-judging, 11	2	--	--
Veterinary Anatomy, 34	4	--	--
Veterinary Medicine, 35	--	4	--
Veterinary Practice, 36	--	--	2
Landscape Gardening, 44	--	--	3
Bacteriology, 59	2	2	2
Agricultural Chemistry, 75	2	2	2
Geology, 69	2	3	--
Soils, 2	--	--	3
Advanced Rhetoric, 89	2	2	--
Public Speaking, 90	--	--	2
Political Economy, 97	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	3	2
German (elective), 92	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elect six periods of the following:			
English Literature, 91	3	3	3
German, 92	3	3	3
Military Drill, 99	3	3	2
Elect sixteen periods of the following, subject to approval of the agricultural faculty:			
Farm Management, 6	--	2	2
Special Crops, 4	5	3	--
Advanced Live-stock Judging, 15	2	--	--
Live-stock Management (beef and dairy cattle), 16	--	2	--
Live-stock Management (horses, sheep and swine), 17	--	--	2
Dairy Bacteriology, 61	3	--	--
Experimental Dairying, 25	--	--	3
Poultry Husbandry, 30	--	--	3
Veterinary Medicine, 37	3	3	3
Histology, 38	4	4	4
Forestry, 46	3	--	--
Plant-breeding, 47	3	3	--
Floriculture, 48	--	3	--
Horticulture, 49	--	--	6
Plant Diseases (advanced), 58	2	2	2
Bacteriology (advanced), 60	2	2	2
Systematic Entomology, 66	2	2	--
Bio-chemistry, 76	3	3	3
Organic Chemistry, 72	3	3	3
Analytical Chemistry (laboratory), 73 and 74	7	7	7

An acceptable thesis is prerequisite to graduation in the Four-year Agricultural Course.

FOUR-YEAR COURSE IN AGRICULTURE.

EQUIPMENT.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and eighty-five acres, with two hundred and fifty acres under cultivation; a large three-story and basement barn fifty by seventy-two feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an electric motor. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The live-stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry plant has twenty-five breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

AGRONOMY.

Subjects of Instruction.

1. Farm Equipment.—Lectures and recitations upon selecting, planning and equipping farms; planning and erecting farm buildings, farm vehicles, and machinery; power, water, and drainage; practical exercises in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Four periods, first term. Required of Juniors. Professor NEWMAN.

2. Soils.—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils,

determining the relation of soils to heat, moisture, air, fertilizers, and mechanical analysis. Three periods, third term. Required of Juniors. Professor NEWMAN.

3. Farm Crops.—Lectures and recitations upon the history, production, harvesting, and marketing of farm crops. Practical exercises with growing and dried specimens of farm crops. Two periods, second, and five periods, third term. For Juniors. Professor NEWMAN.

4. Special Crops.—This course is designed for advanced work in farm crops. Corn and cotton are taken up in detail and studied in all their relations to farm economy. Other crops of importance are taken up as time permits. Five periods, first term; three periods, second term. For Seniors. Professor NEWMAN.

6. Farm Management.—Lectures upon history of agriculture; present agricultural methods in various countries, cost and relation; profits of various farm operations and systems. Two periods, second and third terms. For Seniors. Professor NEWMAN.

ANIMAL HUSBANDRY.

10. Breeds of Live Stock.—The origin, history and characteristics of the several breeds of live stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Two periods, first term. Required of Freshmen. Professor MICHELS.

11. Stock Judging.—Practical exercises are given in live-stock judging. The student is required, after familiarizing himself with the points of the score-card, to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, first term. Required of Juniors. Professor MICHELS.

12. Animal Breeding.—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles or laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Sophomores. Professor MICHELS.

14. Stock Feeding.—The course in stock feeding includes a study of the physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respective uses. The feeding of the various classes of animals will be studied, and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations. Four periods, third term. Required of Sophomores. Professor MICHELS.

15. Advanced Live-stock Judging.—This course will include advanced work in judging of live-stock. Particular stress will be laid on breed types of the different classes of farm animals. Heretofore only the dairy and beef types of cattle, fat and bacon types of swine, mutton and wool types of sheep have been considered. This advanced work will include judging of the particular breed types, classing under these general types, and will be a valuable means of fixing breed characteristics. Two periods, first term. Elective for Seniors. Professor MICHELS.

16. Live-stock Management, Beef and Dairy Cattle.—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. Two periods, second term. Elective for Seniors. Professor MICHELS.

17. Live-stock Management, Horses, Sheep, and Swine.—This course includes lectures and recitations on the feed, care, and management of horses, sheep, and swine in relation to the respective uses for which they are grown. Two periods, third term. Elective for Seniors. Professor MICHELS.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath-rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of De Laval, Sharples, Empire, National, and Simplex hand separators,

swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk-testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and also the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

22. Dairying.—Text-book and lecture course covering the fundamental principles of modern dairying. Two periods, third term. For Freshmen. Laboratory course consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Five periods, third term. For Freshmen. Professor MICHELS.

25. Experimental Dairying.—Lecture and laboratory practice in making butter and cheese of special commercial importance, and a critical study of dairy literature. Three periods, third term. For Seniors. Professor MICHELS.

POULTRY HUSBANDRY.

The poultry plant has twenty-five breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

29. Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction

and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, third term. For Sophomores. Three periods, third term. Mr. JEFFREY.

30. Poultry Husbandry.—Theory and practice of judging fowls by comparison and score-card; special poultry keeping for special markets; comparison of different systems of poultry keeping; a discussion of articles by best writers in poultry press. Three periods, third term. For Seniors. Mr. JEFFREY.

VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

Equipment.

For instruction in the above subjects, the department is provided with lecture-room, two laboratories, pharmacy room (for drugs and surgical instruments), and dissecting room.

The laboratories are supplied with mounted skeletons of man, horse, and cow, with specimens of tumors, tuberculous tissues, and various other diseased tissues.

The laboratory for special work has microtome for cutting sections of tissue for study with microscope; glass slides, stands, and material for making permanent mounts. The other laboratory is supplied with the necessary equipment for conducting exercises in Physiology.

In the pharmacy room are samples of a large number of drugs used in comparative medicine, and a more or less complete set of surgical instruments, including an operating table for small animals, casting harness and slings for larger animals.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live-stock. In addition to the work required of all students in the agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the agricultural courses.

33. Animal Physiology.—The first term's work will deal largely with a study of the structure of the body, the second and third terms' work with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating principles of physiology. Two periods, first term; four periods, second and third terms. Required of Freshmen. Doctor ROBERTS and Mr. SPOON.

34. Veterinary Anatomy.—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors. Doctor ROBERTS and Mr. SPOON.

35. Veterinary Medicine.—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors. Doctor ROBERTS.

36. Veterinary Practice.—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Two periods, third term. Required of Juniors. Doctor ROBERTS.

37. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection. Three periods. For Seniors. Doctor ROBERTS.

38. Histology.—A microscopical study of the tissues of the body. Treats of the cell as the unit of structure and of its functions; of tissues, their classification and relation to the structure organs. Four periods. Elective for Seniors. Doctor ROBERTS and Mr. SPOON.

HORTICULTURE.

The Horticultural Department occupies rooms in the Agricultural Building, including class rooms, laboratory, vegetable and fruit cold-storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

42. **Fruit Culture.**—A course treating of the location of orchards, soil for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include practices in budding, grafting, making cuttings, and a discussion of the principles underlying such practices. Also a study of varieties of fruits, fruit buds, and exercises in pruning. Five periods, first term. Required of Freshmen. Associate Professor REIMER.

43. **Vegetable Gardening.**—This course deals with the selection and preparation of soil for vegetables, construction of hot-beds and cold-frames, fertilizing, handling of seeds, irrigation, transplanting, storing, and culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen. Associate Professor REIMER.

44. **Landscape Gardening.**—This course deals with the planning, arrangement, and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees and shrubs, flowers and flower beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Associate Professor REIMER.

46. **Forestry.**—This course consists of a study of the fundamentals of forestry. It deals especially with the need, influence, formation, care, and improvement of forests. Also the cutting, use, and handling of forest products. A study is made of the forest trees of greatest importance in America. Three periods, first term. Elective for Seniors. Associate Professor REIMER.

47. **Plant Breeding.**—This course includes a brief review of what has been accomplished in plant breeding and a discussion of the most important problems at the present time. It deals with the principles of plant breeding, as laws of breeding, variation and mutation, heredity,

Mendelian laws, crossing, selection, origination and improvement of varieties. The subject is treated from the horticulturist's viewpoint, dealing with fruits, vegetables, and flowers. Lectures, text-book and laboratory work. Three periods, first and second terms. More work can be taken by special arrangement if desired. Elective for Seniors. Associate Professor REIMER.

48. Floriculture.—In this course the important subject of forcing flowers and vegetables is taken up. It deals with the construction, heating, and ventilation of forcing-houses. Also the culture of the leading flowers and vegetables in such houses. Lectures and text-book. Three periods, second term. Elective for Seniors. Associate Professor REIMER.

49. Horticulture.—The last term of the Senior year the student makes a thorough study of modern experimental Horticulture. The leading horticultural investigations of the past and present are studied. A study is also made of all important literature of some horticultural subject. The latter will be chosen with reference to the student's future work. Six periods, third term. Elective for Seniors. Associate Professor REIMER.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, an incubator-room, and a cold-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fireproof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

55. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Freshmen. Professor STEVENS.

56. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor STEVENS.

57. Plant Diseases.—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Professor STEVENS.

58. Plant Diseases (Advanced).—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor STEVENS.

59. Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor STEVENS and Mr. GAINEY.

60. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Two periods. For Seniors. Professor STEVENS and Mr. HALL.

61. Dairy Bacteriology.—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Two periods, first term. For Seniors. Laboratory course consists in

demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. Three periods, first term. For Seniors. Mr. GAINEY.

ZOOLOGY.

64. Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-book. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Four periods, first term. Required of Sophomores. Mr. SMITH.

ENTOMOLOGY.

65. Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade and ornamental plants; *f*, of barn, mill, and household. Lectures and demonstrations. Three periods, second term. Required of Sophomores. Mr. SMITH.

66. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life-history, and habits. Lecture and laboratory practice. Two periods, first and second terms. For Seniors. Mr. SMITH.

GEOLOGY.

69. Geology.—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods, first term; three periods, second term. Required of Juniors.

CHEMISTRY.*

70. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

71. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. He records in a notebook his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

72. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Elective for Seniors. Professor WITHERS.

73. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Seven periods, first term. Elective for Seniors. Doctor WILLIAMS.

74. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Seven periods, second and third terms. Elective for Seniors who have taken Course 73. Doctor WILLIAMS.

75. Agricultural Chemistry.—Snyder's *Soils and Fertilizers* and Jordan's *Feeding of Animals.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

76. Bio-Chemistry.—Lectures and recitations. A discussion of the carbohydrates, fats and proteins. Three periods. Elective for Seniors. Professor WITHERS.

*For further information, see course in Chemistry.

PHYSICS.*

78. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. TRUITT.

DRAWING.†

80. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, first and second terms. Required of Sophomores. Mr. VAUGHAN.

SHOPWORK.†

82. Woodwork.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. Two periods, second and third terms. Required of Sophomores. Mr. CLAY.

MATHEMATICS.

84. Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON and Mr. J. A. PARK.

85. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

87. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

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*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shopwork, drawing and other Mechanical Engineering subjects, see course in Mechanical Engineering.

88. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

89. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

90. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

91. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that

answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

92. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Three periods. Elective for Juniors and Seniors. Doctor RUDY.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor SUMMEY.

MILITARY SCIENCE.

99. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first and second terms; two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

ONE-YEAR COURSE IN AGRICULTURE.

This course is offered for the benefit of young men who cannot afford to take the more complete four-years course. The class-room instruction and practical work is largely a condensation of the four-years course, made appropriate to the needs of young men who are unable to remain longer than one year at the College.

Students taking this course, and under twenty-one years of age, are required to pass the entrance examination for Freshman Class.

Agriculture (Elementary).—The course in Elementary Agriculture will consist of lectures and recitations from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, taking up the analysis and classification of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Five periods. Professor NEWMAN.

Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods. Professor MICHELS.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Five periods, first term. Professor MICHELS.

Diseases of Live-stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent diseases, and the treatment of some of the most common diseases. Five periods, second term. Doctor ROBERTS.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. Mr. JEFFREY.

Fruit Culture.—This course includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of the leading fruits. These deal with the kind of soil; preparation of soils for fruits; varieties; origination of new varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit garden. Three periods, first term. Associate Professor REIMER.

Vegetable Gardening.—This course discusses the great trucking industry in the State, and the possibilities of the industry. This is followed by lectures on the best methods of growing the leading vegetables. Three periods, second and third terms.

Laboratory Work.—This includes practices in plant propagation, as budding, grafting, top-grafting, cutting; pruning of fruit and ornamental trees; fruit-bud studies; planting trees; transplanting, and construction of cold-frames and hot-beds. Associate Professor REIMER.

Diseases of Plants, Fungous and Insect.—Practical instruction will be given concerning the chief fungous or bacterial diseases, and the injurious insects attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures, the selection of spraying machinery and kindred subjects. Two periods. Fungous Diseases, Professor STEVENS. Insect Pests, Mr. SMITH.

Animal and Plant Life.—The structure of the leading types of lower animals and insects and of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Three periods, first term. Professor STEVENS and Mr. SMITH.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, third term. Mr. SMITH.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms. Two hours, third term. Commandant and Officers of the Battalion.

WINTER SHORT COURSES IN AGRICULTURE.

ONE-WEEK COTTON COURSE.

BEGINS JANUARY 4 AND ENDS JANUARY 10, 1910.

This course is to be made strictly practical and will embrace the preparation of the soil; fertilizers for cotton; home mixing of fertilizers and manures; manner and time of applying; varieties; planting; cultivation; gathering and preparing for market; cotton judging for both breeding purposes and for market; insect, fungous and bacterial diseases affecting cotton, and the remedies for such diseases.

The main object of this cotton course is to aid those who attempt to grow more cotton and better cotton on less land; to grow it at less cost and sell it at a greater profit.

Those taking this course will have no expenses other than board and lodging. Board may be had in the mess hall at $2.50 per week.

SEVEN-WEEKS COURSE IN GENERAL AGRICULTURE.

BEGINS JANUARY 11 AND ENDS MARCH 1, 1910.

The regular course of agricultural instruction requires four years for its completion. Many young men cannot afford to take this complete course, and for their benefit the shorter courses are offered.

No examinations are required for entrance to the seven-weeks course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. The greater part of the instruction is given in the form of lectures and laboratory work, and the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects and others by student meetings for their mutual improvement.

The regular work of the seven-weeks course begins January 11th, and all should arrive the day before, in order that their board and room may be arranged for, so that each man may be ready for the work when it begins.

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, to operate dairies, fruit farms, truck and market gardens. The National Department of Agriculture, the State Experiment Stations, the Agricultural and Mechanical Colleges and the hundreds of commercial industries requiring scientifically trained men are eagerly seeking young men of such force and

training as is given in the Agricultural and Mechanical Colleges. The demand is greater than the supply. The teaching of agriculture in the public schools and the organization of agricultural high schools, with agricultural instruction as an important feature, have met with a serious check for no other reason than that there are not enough trained teachers to supply the demand.

EQUIPMENT.

The Agricultural Building is devoted entirely to agriculture, and contains laboratories and class rooms built and furnished especially for the purposes for which they are used. Equipment is constantly being added and facilities for instruction become better every year. The professors in each division of the Agricultural Department are specialists in their chosen work and are devoting their lives to study and to methods of improving rural life.

EXPENSES.

No tuition is charged for the seven-weeks course, and board may be had in the mess hall for $2.50 per week. Students who expect to room in the dormitories should be provided with bedcover, sheets, pillowcases, and towels.

While engaged in work in the dairy laboratory, students are required to wear white suits. These suits may be had at $1 apiece. The total expense of the course need not exceed $25 over and above railroad fare.

OUTLINE OF SEVEN-WEEKS COURSE.

GENERAL AGRICULTURE.

Professor Newman.

Soils.—Study of origin, formation and classes of the soils of the State; their physical properties, natural, and induced fertility; the tillage treatment of the different classes of soils and special tillage practice for the leading crops of the State; principles and practices of farm drainage.

Farm Equipment.—Selection and laying out of farm; building of farm fences, roads, houses; tools and machinery and their economic use.

Fertilizers.—Commercial fertilizers, farm manures, green manures; composition of fertilizers and the time and method of application; special composition for special crops; mixing of commercial fertilizers.

Farm Crops.—Selection of crops to be grown and their economic relationship in farm operations; preparation and cultivation; methods of planting; seed selection and plant breeding; studies of the staple crops; corn and cotton judging.

AGRICULTURAL BOTANY.

Dr. Stevens.

This course will consist of the practical study of the diseases of plants, how to recognize them and how to prevent them; bacteria, their nature, their effects for good or harm in the farm home, and how to control them, their function in the soil as nitrogen gatherers; the cross-breeding of plants; how to accomplish it, its object, and the benefits to be derived therefrom.

FEEDS AND FEEDING AND STOCK RAISING. *24 periods.*

Professor Michels.

Lectures on this subject will treat of the composition and digestibility of home-grown and commercial feeds; methods of calculating rations for different classes of farm animals, with suggestions as to the best and the most economical feeds for the different classes of live-stock.

An outline will also be given of the characteristics, care and management of the most prominent breeds of live-stock.

BREEDS OF LIVE-STOCK AND STOCK JUDGING. *24 periods.*

Professor Michels.

Lectures on this subject will treat of the characteristics of the different breeds of dairy cattle.

The practical part of the work will be given in the judging room, where the student is required to score the animals and pass upon their respective merits.

DAIRY FARMING. { *Lectures, 12 periods.* / *Laboratory, 24 periods.*

Professor Michels.

Lectures are given on the nature, composition, and secretion of milk, its uses and value as a food; the production and care of sanitary milk, management of dairy herd, details in the production of high-grade cream and butter; the marketing of dairy products, and their value when sold as milk, cream, butter and cheese.

The dairy laboratory course, given in connection with the farm dairy lecture course, consists of twenty-four periods of two hours each and comprises every detail of dairy work, butter-making, retail-

ing milk, making cottage cheese and skimmed milk, buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products and standardizing milk and cream.

DAIRY EQUIPMENT.

The dairy laboratories occupy about four thousand square feet of floor space on the ground floor of the Agricultural Building, besides the locker-rooms, toilet and bath-rooms on same floor, and the dairy lecture-room on first floor, used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes, cream vats, hand and power butter-workers, aerators and coolers, milk-testers, and other articles useful in doing farm dairy work.

DISEASES OF LIVE-STOCK. *21 periods.*

Dr. Roberts.

The lectures on this subject will deal principally with the care and management of live-stock with a view to the prevention of diseases, but the nature, causes, and treatment of the more common diseases and injuries will also be given attention. One period each week will be devoted to a clinic, and a practical demonstration of the tuberculin test upon the dairy herd will be given during the course.

HORTICULTURE. *21 periods.*

Associate Professor Reimer.

The work in Horticulture for the winter-course students will be just as practical as it is possible to make it. Lectures will be given on fruit-growing, including preparation of soil for fruits, planting, varieties, best methods of cultivation, cover crops, fertilizers and manures, and pruning.

Lectures will also be given on soils and their preparation for vegetables, fertilizers and manures for vegetables; the home vegetable garden, early and late vegetables, planting and transplanting, hot-beds and cold-frames, cultivation of vegetables.

The laboratory work will include work in budding and grafting fruit trees, planting, pruning, treatment of injured trees; and starting of vegetables in hot-beds and cold-frames.

POULTRY RAISING. *21 periods.*
Mr. Jeffrey.

The subject of poultry raising will be considered from the farm standpoint and will include poultry-house construction, the breeds of fowls most suited to the farm and their breeding, feeding, and management, egg production, market poultry, including capons and caponizing, incubation and brooding, both natural and artificial.

Those wanting more poultry work than is provided in the regular work can, in the last half of the course, have additional work of this kind, taking care of a pen of fowls, running the incubator, raising chickens in a brooder and keeping all the records necessary in poultry work.

The poultry department is equipped with twenty-five houses, a good incubator cellar with several different makes of incubators, a brooder-house, and both indoor and outdoor brooders, a feed room with steam engine and grist and bone mills. Good specimens of ten varieties of poultry best suited to farm requirements are kept, so that students may get familiar with the requirements of the different breeds.

SHORT COURSE IN ENTOMOLOGY. *21 periods.*
Mr. Smith.

Insect injury to farm crops, fruit, and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully ten per cent. of the value of all agricultural products is destroyed each year, and yet there are many farmers who know very little of the habits and life-history of the most common insects. We should know how insects pass the winter, when they are most easily destroyed or prevented, and the best methods of combating them.

The short course in Entomology will consist of a number of lectures, illustrated by specimens, photographs, and charts, relative to insects affecting the principal crops and fruits; field observations of insects that may be studied in January and February; practical work in making and applying mixtures for destroying insects. The use of different forms of spraying apparatus will be demonstrated by practical field work performed by the students.

A little time will be given to a study of the best methods for preventing or destroying household insects.

ENGINEERING COURSES.

Four-year Courses in

II. Civil Engineering.
III. Mechanical Engineering.
IV. Electrical Engineering.
V. Mining Engineering.
VI. Chemistry.

Two-year Course in

IIIa. Mechanic Arts.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136†	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Architecture, 125	2	--	--
Architectural Drawing, 126	2	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Descriptive Geometry, 101	--	2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 103 and 106	2	2	2
Surveying (field work), 107	2	2	2
Construction, 105	2	--	--
Descriptive Geometry, 101	2	2	2
Graphic Statics, 102	--	2	2
Mechanics, 104	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
Spanish (elective), 279	3	3	3

Senior Year.

Mechanics of Materials, 115	3	--	--
Construction, 105	--	2	2
Road-building, 112	2	--	--
Roofs and Bridges, 109	3	--	--
Bridge Design, 110	--	4	4
Municipal Engineering, 111	--	2	2
Surveying (field work), 108	2	1	1
Hydraulics, 116	--	2	2
Calculus, 269	2	--	--
Railroad Engineering, 106	2	2	2
Reinforced Concrete, 114	--	2	2
Astronomy, 113	--	2	2
Mechanics, 104	3	--	--
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
Spanish, 279	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work.

Subjects of Instruction.

101. Descriptive Geometry, Stereotomy.—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. MANN.

102. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Professor RIDDICK and Mr. MANN.

103. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying.* Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Mr. VON GLAHN.

104. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Two periods. Required of Juniors in Civil and in Mining Engineering. Three periods, first term. Required of Seniors. Mr. MANN.

105. Construction.—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction.* Lectures. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

106. Railroad Engineering.—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering.* Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Two periods. Required of Seniors in Civil Engineering. Mr. MANN.

107. Surveying.—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. VON GLAHN and Mr. SYKES.

108. Surveying.—Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term; one period, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN, Mr. SYKES and Mr. VON GLAHN.

109. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges*. Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

110. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

111. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

112. Road Building.—Text-book on construction of roads, streets, and pavements. Lectures on practical roadmaking in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

113. Astronomy.—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers*. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

114. Reinforced Concrete.—Turneaure & Maurer's *General Theory of Concrete and Steel Construction*. Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN.

115. Mechanics of Materials.—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials*. Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

116. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics*. Two periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

ARCHITECTURE.

125. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

126. Architectural Drawing.—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN and Mr. VON GLAHN.

COURSE IN MECHANICAL ENGINEERING.

The regular four-year course in Mechanical Engineering is intended to train the student for positions of trust and responsibility in engineering work, and also to furnish him with a basis for carrying on of more advanced engineering studies. The course treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers, and engines.

The two-year course is offered to students who wish to become machinists,. draughtsmen, or stationary engineers. For entrance to this course a less degree of academic preparation is required than for entrance to the four-year Engineering Course.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 139	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

Steam Engines and Boilers, 158	2	2	2
Mechanics, 169	2	2	2
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Electrical Engineering, 183	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Applied Mechanics, 170	3	3	2
Machine Design, 141	3	3	3
Machine-shop Work, 151	2	2	2
Power Plants, 161	3	--	--
Gas Engines, 162	3	--	--
Power Transmission, 160	--	--	2
Refrigeration, 163	--	3	--
Pumping Machinery, 165	--	1	--
Heating and Ventilation, 166	--	--	3
Structural Engineering, 167	--	2	2
Steam Engineering Laboratory, 168	2	2	2
Calculus, 269	2	--	--
Hydraulics, 116	--	2	2
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
German, 277	3	3	3

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop, office, and library. On the second floor are the recitation room and two drawing-rooms. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books available for the use of students.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine, a one-horse-power gasoline engine (all of which were built by students), a two-horse-power International gasoline engine, a two-horse-power McVicker automatic gasoline engine, a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a 4½x6x6 Blake air pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a water motor, a Worthington water meter, a complete Westinghouse airbrake equipment, a New York airbrake equipment in section, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The shops are equipped as follows:

The woodworking equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 34-inch band saw; a jig saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain-mortiser; a dovetailing machine; a 38-inch grindstone; a wood trimmer; an adjustable miter box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well-lighted and ventilated, neatly-paved room, thirty by forty feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis & Eagan lathe with 10-foot bed, 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a

Brown & Sharpe universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe-threading and cutting machine, a Greenwich arbor press and an electric center grinder, a Whiton centering machine, and a Twist drill grinder. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The foundry occupies a separate building 30x60 feet and is of capacity to accommodate about 30 students. It contains two Griffin oil-burning furnaces, one for cast iron, one for brass, a No. 0 Sturtevant high-pressure blower for furnishing air, and a small triplex pump for furnishing oil under pressure. There is also a crucible brass furnace, a cadet core oven, and all necessary tools for bench and floor work. A 36-inch cupola is being installed, which will add greatly to the benefit to be received from foundry work. The power for the shops is furnished by electric motors.

Subjects of Instruction.

136. **Mechanical Drawing.**—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing. Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Elementary principles of Descriptive Geometry, cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods. Required of Freshmen. Mr. VAUGHAN.

139. **Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blueprinting. Elementary machine design. Cam design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. ELLIS.

140. **Machine Design.**—Study of the communication of motion by gear wheels, belts, and link work; automatic feed, parallel and quick return motions. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Boiler design. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. ELLIS.

141. **Machine Design.**—Estimating, checking of working drawing, original design. Calculations and working drawings of types of steam engines, gas engines, gas producers, pumps, condensers, shafting, etc. Three periods. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

146. Woodwork.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in woodturning. Two periods. Required of Freshmen. Mr. CLAY.

147. Forge-work.—Exercises in working with iron and steel. Welding, tempering and casehardening. Uses and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

148. Foundry.—Recitations and exercises in foundry work; including molding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of all Freshmen third term, and of Sophomores in Mechanical and Electrical Engineering first term. Mr. WHEELER.

149. Pattern Making.—Exercises in making patterns and moulds of machine parts. Two periods, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CLAY.

150. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. PARK.

151. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Two periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

158. Steam Engines and Boilers.—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed water heaters; mechanical stokers; smoke con-

sumers and chimneys are studied in detail. Two periods. Required of Juniors in Mechanical and Textile, and Seniors in Electrical and Mining Engineering. Professor SATTERFIELD.

160. Transmission of Power.—This work includes a study of the methods employed for the transmission and measurements of power in machine shops and factories, and review of experiments which have been made to determine the efficiency of various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

162. Gas Engines.—Theory of the gas engine. Various types of gas, gasoline, and oil engines. Brake and indicated horse-power; efficiency. Gas producers. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Carbon dioxide and compressed-air machines. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Waterworks machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. Three periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

168. Steam Engineering Laboratory.—Practice in engine running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Two periods; required of Seniors in Mechanical Engineering. One period; required of Seniors in Electrical Engineering. A brief course in Surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines, and machinery by the use of transit and level. Professor SATTERFIELD and Mr. ELLIS, Mr. VAUGHAN and Mr. CLAY.

169. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Preparatory to Applied Mechanics in Senior year. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. VAUGHAN and Mr. ELLIS.

170. Applied Mechanics.—A study of the laws of equilibrium and motion as applied to a particle and to rigid bodies; analytic treatment of stresses in framed structures, center of gravity, moment of inertia, work and energy, and friction; mechanics of materials, including stresses and deformations in tension, compression, shearing, torsion, and flexure; stresses and deformation in long columns, continuous girders, arch ribs, and reinforced concrete, and the elements of the theory of elasticity. Three periods, first and second terms; two periods, third term. Required of Seniors in Mechanical and Electrical Engineering. Mr. ELLIS and Mr. VAUGHAN.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior and Junior years a course in designing the various electrical machines is given.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 183	2	2	2
Electrical Engineering Laboratory, 186	2	2	2
Electrical Design, 191	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Mechanics, 169	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military, Tactics, 300	1	1	1
Military Drill, 299	3	3	2
Spanish (elective), 279	3	3	3

Senior Year.

Electrical Engineering, 184	3	3	3
Electrical Engineering, 185	2	2	2
Electrical Engineering Laboratory, 190	2	2	2
Electrical Design, 192	2	2	2
Electrical Engineering Seminary, 193	1	1	1
Steam Engines and Boilers, 158	2	2	2
Applied Mechanics, 172	3	3	2
Steam Engineering (laboratory), 168	1	1	1
Calculus, 269	2	--	--
Hydraulics, 116	--	2	2
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
Spanish, 279	3	3	3

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound, and light. Text-book used: Milliken & Gale's *First Course in Physics.* Four periods. Required of Freshmen in Engineering courses. Mr. SPRAGUE and Mr. TRUITT.

177. Elementary Lessons in Electricity and Magnetism.—Text-book used: *Elementary Electricity and Magnetism,* by D. C. & J. P. Jackson. Two periods. Required of Sophomores. Professor BROWNE.

178. Physical Laboratory.—Practice in handling units in British and metric systems. Experiments in mechanics, illustrating addition and composition of forces, the lever, the inclined plane, the pendulum, density, and specific gravity, and Boyle's law. Experiments in heat, sound, and light, covering the following subjects: Thermometer calibration, calorimetry, hygrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscope. Text-book used: Cheston-Dean-Timmerman's *Laboratory Course in Physics.* One period. Mr. SPRAGUE and Mr. TRUITT.

179. Physical Laboratory.—Continuation of Course 178. Elementary experiments in magnetism. The electric circuit. Primary batteries. Measurement of electro-motive force, current, and resistance. Telegraph and telephone circuits. One period. Required of Sophomores in Electrical, Mining, and Mechanical Engineering, and in Chemistry. Mr. SPRAGUE.

ELECTRICAL ENGINEERING.

Equipment.

For this course two laboratories are equipped: one known as the instrument laboratory, in which measuring instruments and apparatus are kept, and the other as the dynamo laboratory, containing generators, motors, transformers, switchboards, etc. The instrument lab-

oratory is provided with direct and alternating current voltmeters, ammeters, and wattmeters, Wheatstone bridges, galvanometers, condensers, etc. It is supplied from the central power-house with direct and alternating currents of any voltage, phase, or frequency for use in checking instruments and making measurements. The dynamo laboratory is a small one-story brick building 30 x 50 feet, and is equipped with a 3-phase synchronous motor coupled directly to a line shaft arranged to drive small generators, an 11.5 k. w. 110-volt Westinghouse d. c. generator, 20 k. w. 2-phase 110-volt Lincoln alternator, one 6-light T. H. arc-lighting generator, one 1-horse-power Sprague motor, one 8 k. w. 110-volt Siemens & Halske generator, one 2-horse-power 3-phase 110-volt G. E. induction motor, one 2 k. w. 110-volt LaRoche single-phase alternator, two 2½ k. w. 110-volt 3-phase generators, two 2½ k. w. 125-volt compound wound d. c. generators with series coils for use as series motors or generators, one 2½ k. w. 110-volt a. c. rotary converter. The laboratory also contains constant potential and constant current transformers, condensers, circuit-breakers, etc., and a switchboard well equipped with voltmeters, ammeters, frequency indicators, etc.

The central power station is also available for student use, the equipment consisting of a 75 k. w. 600-volt 3-phase Crocker-Wheeler generator coupled to a Skinner engine, two 50 k. w. 300-volt 3-phase Crocker-Wheeler generators coupled to a 150-horse-power De Laval steam turbine, one 9.5 k. w. 125-volt Westinghouse d. c. exciting generator, and switchboard provided with meters, instrument transformers, oil circuit-breakers, wattmeters, synchroscope, etc.

The department possesses a small library of standard books on all branches of Physics and Electrical Engineering.

183. Electrical Engineering.—The magnetic circuit. Electrical measurements. Electro-magnetic induction. Storage batteries. Arc-lighting. Incandescent lighting. Interior wiring. Dynamos and dynamo design. Direct current motors. Management and operation of dynamos and motors. Text-books used: Franklin & Esty's *Elements of Electrical Engineering* and Hay's *Continuous Current Engineering*. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Professor BROWNE and Professor WALTER.

184. Electrical Engineering.—Practice in calculating circuits containing resistance, inductance, and capacity. Alternators. Theory of transformers, induction motors, a. c. series motors, and repulsion motors. Power transformation and measurement. Text-book used: Franklin & Esty's *Alternating Currents*. Three periods. Required of Seniors in Electrical Engineering. Professor BROWNE and Professor WALTER.

185. Electrical Engineering.—Line construction. Switchboards and appliances. Electric power stations. Illumination. Electric car equipment. Motors and controllers. Line and track. Line calculations. Multiple unit systems. Text-book used: *Standard Handbook for Electrical Engineers.* Two periods. Required of Seniors in Electrical Engineering. Professor BROWNE and Mr. DORSEY.

186. Electrical Engineering Laboratory.—Practice in varying the ranges of ammeters and voltmeters. Various methods of measuring resistance. Permeability and hysteresis tests. Practice with direct current generators and motors. Characteristic curves. Efficiency tests. Two periods. Required of Juniors in Electrical Engineering. Mr. DORSEY.

190. Electrical Engineering Laboratory.—Senior year. Coupling d. c. generators for parallel, series and three-wire operation. Stray power tests. Kapp's pumping-back method. Heat test of a d. c. dynamo. Series and parallel a. c. circuits. Platting vector diagrams. Experiments with a. c. generators, induction and synchronous motors, transformers, etc. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Mr. DORSEY.

191. Electrical Design.—Design of Rheostats, Heating Devices, Controllers and Electro-magnets. Two periods. Required of Juniors in Electrical Engineering. Professor WALTER.

192. Electrical Design.—Design of Transformers, Direct Current Generators, Alternators, Induction Motors, and Rotary Converters. Two periods. Required of Seniors in Electrical Engineering. Professor WALTER.

193. Electrical Engineering Seminary.—Review of the current electrical engineering periodicals. One period. Required of Seniors in Electrical Engineering. Professor BROWNE.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery, and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 105	2	--	--
Graphic Statics, 102	--	2	2
Surveying, 103 and 106	2	2	2
Surveying (field work), 107	2	2	2
Descriptive Geometry, 101	2	2	2
Mechanics, 104	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

Senior Year.

Mining, 206	--	4	4
Ore Dressing, 207	4	--	--
Geology, 211	2	2	2
Metallurgy, 208	--	2	2
Mineralogy, 212	4	--	--
Assaying, 209	--	2	2
Steam Engines and Boilers, 158	2	2	2
Hydraulics, 116	--	2	2
Calculus, 269	2	--	--
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, sloping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining.

208. Metallurgy.—Introductory: combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining.

GEOLOGY AND MINERALOGY.

211. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors in Mining.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining.

COURSE IN CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in that department. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in applied chemical subjects. The kindred scientific subjects of Biology and Physics and the fundamental principles of engineering, are taught, together with the cultural studies included in the other courses.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

CHEMICAL EQUIPMENT.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

VI. The Four-year Course in Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry	--	--	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Elementary Botany, 241	3	3	3
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 218	3	3	3
Analytical Chemistry, 220 and 226	7	7	7
Bacteriology, 251	2	2	2
German, 277	3	3	3
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2

Senior Year.

Bio-Chemistry, 233	3	3	3
Analytical Chemistry, 226	7	7	7
Organic Chemistry (laboratory), 228	4	4	4
Advanced Bacteriology, 252	2	2	2
German, 277	3	3	3
Elect one subject from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

217. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

218. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Chemistry. Professor WITHERS and Doctor WILLIAMS.

220. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common elements in unknown substances. Seven periods, first term. Required of Juniors in Chemistry. Doctor WILLIAMS.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of agricultural and technical importance. Seven periods, second and third terms. Required of Juniors in Chemistry. Seven periods. Required of Seniors in Chemistry. Doctor WILLIAMS.

228. Organic Chemistry.—Laboratory work. Orndorff's *Laboratory Manual* and Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. Four periods. Required of Seniors in Chemistry. Doctor SYME.

233. Bio-Chemistry.—Lectures and recitations. A discussion of the carbohydrates, fats and proteins. Three periods. Required of Seniors in Chemistry. Professor WITHERS.

BOTANY.

241. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading, regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Sophomores in Chemistry. Professor STEVENS.

BACTERIOLOGY.

251. General Bacteriology.—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of

bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor STEVENS and Mr. GAINEY.

252. **Bacteriology, Advanced.**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS and Mr. HALL.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet, at the same time, it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises and lectures, the scope being quite sufficient for the needs of the institution.

263. **Algebra.**—Wells's *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON and Mr. J. A. PARK.

264. **Geometry.**—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Required of all Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

265. **Solid Geometry.**—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

266. **Advanced Algebra.**—Wells's *New Higher Algebra.* Permutations, combinations, continued fractions, summation of series, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES and Mr. RICHARDSON.

267. **Trigonometry.**—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

268. Analytical Geometry.—Nichols's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Five periods, first and second terms. Required of Juniors in Engineering. Professor YATES.

269. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of undeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Five periods, third term. Required of Juniors. Two periods, first term. Required of Seniors. Professor YATES.

ENGLISH.

272. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

273. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

274. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

275. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

276. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a

text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one *(a)* to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and *(b)* to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German for students of Chemistry and Mechanical Engineering, and Spanish for Civil and Electrical Engineering students.

277. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader.* Elective for Juniors or Seniors. Doctor RUDY.

278. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor RUDY.

279. Spanish.—Worman's *Modern Languages*, first and second Spanish books; *Introduccion a la Lengua Castellana*, Marion y Des Garrenes; a *Spanish Grammar* to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas.* Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor RUDY.

POLITICAL ECONOMY.

297. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. Doctor SUMMEY.

MILITARY SCIENCE.

299. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Required of all classes except Seniors. Seniors are either to take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

300. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Juniors. Lieutenant YOUNG.

THE TWO-YEAR COURSE IN MECHANIC ARTS.

This is largely a practical course intended for those who are not prepared, academically, to enter the four-year course. On the completion of this course a young man is fitted for a position as machinist, draughtsman, stationary engineer, or to fill similar positions.

SUBJECTS OF INSTRUCTION.

First Year.

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing; geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry, cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Four periods. Mr. VAUGHAN.

Woodwork.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Three periods. Mr. CLAY.

Forge-work.—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Mr. WHEELER.

Foundry.—Recitations and exercises in foundry work, including molding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Mr. WHEELER.

Mechanical Technology.—Classification and uses of woodworking and forging tools and machines. Methods of woodworking and forging. Arrangement, sizes, and care of belting and shafting. One period. Professor SATTERFIELD.

Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Mr. RICHARDSON and Mr. SYKES.

Algebra.—Wells' *New Higher Algebra* to quadratic equations. Five periods, second and third terms. Mr. RICHARDSON and Mr. SYKES.

Preparatory English.—The forms of the language, the spelling and definition of words, the classification and punctuation of sentences, are taught in text-book, in much class-reading and in daily written exercises. The object of this course is to impart the power of interpreting the written page and of expressing ideas in both the spoken and the written word. Three periods. Dr. SUMMEY and Mr. BONN.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two periods, third term. Commandant and Officers of the Battalion.

Second Year.

Mechanical Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Mr. ELLIS.

Machine-shop work may be elected instead. Five additional periods of Mechanical Drawing may be elected.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Mr. PARK.

Elective Work.—Five additional periods of shop work, either wood shop, machine shop or foundry, may be elected.

Steam and Steam Machinery.—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Three periods. Professor SATTERFIELD.

Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Mr. RICHARDSON and Mr. J. A. PARK.

Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Commandant and Officers of the Battalion.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a typical cotton mill, is fully equipped with all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening Room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding Room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11x5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9x4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning Room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by the T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen looms; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn, Lincoln & Co., Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2x1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton

4x1 box gingham loom, one Crompton 4x1 box loom with 20-harness dobby, one Crompton 2 and 1-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4x4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One single-box loom with 200-hook table-napkin Jacquard machine. One 4 x 1 box table-cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Knitting.—One full automatic knitting machine, made by George D. Mayo Machine Company, Laconia, N. H. One ribber, made by Scott & Williams, Philadelphia, Pa. One looper, made by Beattie Manufacturing Company, Cohoes, N. Y.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, alkalies, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

H. A. Metz & Co., New York.
Badische Company, New York.
Farbenfabriken of Elberfield Co., New York.
Danker & Marston, Boston, Mass.
Berlin Aniline Works, New York.
Cassella & Co., New York.

Dye-house Equipment.—Seven dye vats; one Roessler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kier; one hand-dyeing jigger; one 15-gallon steam jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Co.'s warp dyeing machine; one Textile Finishing Co.'s warp sizing machine; one 5-can upright dryer; one small Lightfoot raw stock dyeing machine; one Tolhurst Machine Works hydro-extractor; one Schaum & Uhlinger hydro-extractor; one Mather & Platt cloth printing machine; one Fries warp dyeing machine; one dry closet.

A full equipment of analytical balances and other necessary apparatus for experiment work.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks-Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

THE FOUR-YEAR COURSE.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301†	1	1	1
Weaving, 302	2	2	2
Mechanical Drawing, 317	2	2	2
Woodwork, 320	2	2	2
Forge-work, 321	2	2	--
Foundry, 322	--	--	2
Algebra, 335	5	3	--
Geometry, 336	--	2	5
Elementary Physics, 331	2	2	2
Composition and Rhetoric, 341	3	3	3
Military Drill, 359	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	--	--
Advanced Algebra, 338	--	3	--
Trigonometry, 339	--	2	5
American Literature, 342	3	3	3
Military Drill, 359	3	3	2

Junior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Steam Engines and Boilers, 326	2	2	2
Advanced Rhetoric, 343	2	2	--
Public Speaking, 344	--	--	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	3	2
German, 348	3	3	3

*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	2	2	2
Cloth Analysis, 304	1	1	1
Dyeing, 306	1	1	1
Dyeing (laboratory), 307	2	2	2
Machine-shop Work, 324	2	2	2
Elect two subjects from the following:			
English Literature, 345	3	3	3
Military Drill, 359	3	3	2
German, 348	3	3	3

DESCRIPTION OF SUBJECTS.

301. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards, sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of Freshmen, Sophomores, Juniors, and Seniors. Assistant Professor PARKER.

302. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinder;

immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor NELSON and Mr. STEED.

303. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piqués. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra

warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor NELSON and Mr. STEED.

304. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, Seniors. Professor NELSON and Mr. STEED.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dye stuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	1	1	1
Weaving, 302	2	2	2
Mechanical Drawing, 317	2	2	2
Woodwork, 320	2	2	2
Forge-work, 321	2	2	--
Foundry, 322	--	--	2
Algebra, 335	5	3	--
Geometry, 336	--	2	5
Elementary Physics, 331	2	2	2
Composition and Rhetoric, 341	3	3	3
Military Drill, 359	3	3	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	--	--
Advanced Algebra, 338	--	3	--
Trigonometry, 339	--	2	5
American Literature, 342	3	3	3
Military Drill, 359	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 311	3	3	3
Analytical Chemistry, 312 and 313	7	7	7
Advanced Rhetoric, 343	2	2	--
Public Speaking, 344	--	--	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	3	2
German, 348	3	3	3

Senior Year.

Dyeing, 306	3	3	3
Industrial Chemistry, 315	2	2	2
Analytical Chemistry, 313	7	7	7
Organic Chemistry (laboratory), 314	4	4	4
Elect two subjects from the following:			
English Literature, 345	3	3	3
Military Drill, 359	3	3	2
German, 348	3	3	3

DESCRIPTION OF SUBJECTS.

306. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalies, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyestuffs and their application to cotton. After-treatment of direct dyestuffs, including diazotising and developing

and the topping with basic dyestuffs. The application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalies and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

307. Dyeing Laboratory.—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a scrap-book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

CHEMISTRY.*

309. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

310. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

311. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Dyeing. Professor WITHERS.

312. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Seven periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.

313. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Seven periods. Required of Seniors in Dyeing. Doctor WILLIAMS.

314. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Four periods. Required of Seniors in Dyeing. Doctor SYME.

315. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Three periods. Required of Seniors in Dyeing. Professor WITHERS.

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*For further information, see course in Chemistry.

MECHANICAL ENGINEERING.*

317. Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine; elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of Freshmen. Mr. VAUGHAN.

320. Woodwork.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY.

321. Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

322. Foundry.—Recitations and exercises in foundry work, including molding, core making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of Freshmen, third term. Mr. WHEELER.

324. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. PARK.

326. Steam Engines and Boilers.—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam-engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed-water heaters; mechanical stokers; smoke-consumers and chimneys are studied in detail. Two periods. Required of Juniors in Textile Industry. Professor SATTERFIELD.

*For full information, see course in Mechanical Engineering.

PHYSICS.†

331. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. TRUITT.

MATHEMATICS.

335. Algebra (Continued).—Wells' *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

336. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

337. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

338. Advanced Algebra.—Wells' *New Higher Algebra.* Permutations, combinations, continued fractions, summation of series, general theory of equation, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES and Mr. RICHARDSON.

339. Trigonometry.—Wells' *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of Spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

341. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, and Mr. BONN.

†For full information, see course in Electrical Engineering.

342. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, and Mr. BONN.

343. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

344. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

345. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may elect German during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German and French.

348. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors and Seniors. Doctor RUDY.

349. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor RUDY.

This subject may be taken by special petition to the Faculty.

POLITICAL ECONOMY.

353. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor SUMMEY.

MILITARY SCIENCE.

359. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; and two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

360. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

TWO-YEAR COURSE.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning	2	2	2
Weaving	3	3	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Mechanical Drawing	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Arithmetic	5	--	--
Algebra	--	5	5
English	3	3	3
Military Drill	3	3	2

Second Year.

Carding and Spinning	5	5	5
Warp Preparation	--	--	1
Weaving	4	4	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Dyeing	3	3	3
Machine-shop Work	2	2	2
English	3	3	3
Military Drill	3	3	2

DESCRIPTION OF SUBJECTS.

Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks.

Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of first and second year students. Assistant Professor PARKER.

Weaving.—Lectures on construction of plain, twill, sateen, gingham, pick, and pick looms are given, also construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms; construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up dobby on loom; fixing dobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production; counts of reed and cotton harness. Finishing; cotton fabrics. Necessary equipment for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of first and second-year students. Professor NELSON and Mr. STEED.

Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first and second year students. Professor NELSON and Mr. STEED.

Cloth Analysis and Fabric Structure.—Calculating particulars of loth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Draughting and pattern chain building. Reed nd harness calculations. Calculations to obtain quantities of warp and lling in stripe and check fabrics. To find number of threads per nch, using a given weight of warp; also number of picks per inch, sing a given weight of filling. Yarn calculations. System of numering woolen, worsted, silk, linen, and cotton yarns. Determination f one system of yarn to that of another. Textile calculations. Dermining the number of threads and picks per inch to make a perfect loth. Calculations to determine the texture in an unequally reeded abric. Diameter of threads. Balance of cloth. Texture for double loth. Required of first and second-year students. Professor NELSON nd Mr. STEED.

MECHANICAL ENGINEERING.*

Mechanical Drawing.—Work in the use of the pencil; technical ketches of objects, usually parts of a machine. Geometric drawing; sometric and cabinet drawing; elementary projections; drawings nade to scale from working sketches of pieces of a machine. Elenentary principles of descriptive geometry; cylinders, cones, and risms; intersection and development of surfaces; miscellaneous probems. Two periods. Required of first-year students. Mr. VAUGHAN.

Forge-work.—Exercises in working with iron, welding; use and are of forge tools and fires. Two periods. Required of first-year tudents.

MATHEMATICS.*

Arithmetic. — Milne's *Standard Arithmetic.* Begin with decimal ractions and complete the subject. Five periods, first term. Required of first-year students. Mr. RICHARDSON and Mr. SYKES.

Algebra.—Wells' *New Higher Algebra.* Up to quadratic equaions. Five periods, second and third terms. Required of first-year tudents. Mr. RICHARDSON and Mr. SYKES.

Preparatory English.—The forms of the language, the spelling and efinition of words, the classification and punctuation of sentences, re taught in text-book, in much class reading and in daily written xercises. The object of this course is to impart the power of interreting the written page and of expressing ideas in both the spoken nd the written word. Required of first-year students. Three peiods. Doctor SUMMEY and Mr. BONN.

*For full information, see course in Engineering.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours for first and second terms; two hours, third term. Required of first and second year students. Commandant and Officers of the Battalion.

ADDITIONAL SUBJECTS IN THE SECOND YEAR.

Warp Preparation.—Lectures on construction of warp preparation machinery, spooler; section warper, ball warper; size kettle; slasher. Practice in operating machines. Laying out pattern warps for long and short chain beaming. Size mixing and boiling; value of ingredients used in sizing; sizing receipts for light, medium, and heavy sizing. One period, third term. Required of second-year students.

Dyeing.—The object of this course is to give the student a sound practical knowledge of the fundamental principles which underlie the arts of bleaching, dyeing, mercerizing, etc., of cotton yarns and fabrics. The manipulation of the various machines used in bleaching, dyeing and mercerizing is carefully explained. The physical and chemical properties of the material to be dyed receive first consideration, followed by a study of the adaptability of water for bleaching, dyeing, mordanting, etc. The practical application of the dyestuffs themselves is treated in the most thorough and detailed manner, *e. g.*, the substantive dyestuffs dyed direct, diazotised and developed, after-treated with metallic salts, topped with basic dyes, etc., the basic dyestuffs, sulphur dyestuffs, indanthrene dyestuffs, etc. Practice in color-mixing and matching is given. The student in this way acquires a collection of several hundred dyed samples which, when mounted in his pattern book, serve as a valuable reference. The course is supplemented by lectures, which will include the consideration of many difficult problems that arise in the dye-house. Three periods. Required of second-year students. Mr. HALSTEAD.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of second-year students. Mr. PARK.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor HARRISON, Doctor SUMMEY, and Mr. BONN.

NORMAL COURSES.

I. For Rural Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) A Two-weeks Spring Course.

II. For City Teachers:
   (a) Two-year Course.
   (b) One-year Course.
   (c) A Two-weeks Spring Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and the College has a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the College, except in the May School.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Nature Study { Plants	3	3	3
Nature Study { Animals	3	3	3
English	3	3	3
Mathematics	5	5	5
Military Drill	3	3	2

Second Year.

Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	3	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Methods of Teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	--	--
Diseases of Live-stock	--	5	--
Botany	3	--	--
Poultry	--	3	3
Entomology	--	--	3
Diseases of Plants	--	--	2
Agricultural Literature	1	1	1

Elective in any College department, *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing, and others.

II. Courses for City Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Woodwork	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	2

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term
Drawing	2	2	2
Woodwork	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	5	5	5
Military Drill	3	3	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology, 3, Physiological Botany 3.

(*b*) ONE-YEAR COURSE.

Drawing	3	4	4
Woodwork	4	5	5
Forge-work	2	2	2
Architecture	2	--	--
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	3	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

THE MAY SCHOOL FOR TEACHERS.

May 3 to 15, 1909.

Agriculture, Nature Study and Common Branches.—This course s designed to meet the needs of teachers of the public, common and ıigh schools who desire more preparation in Nature Study and Agri-ulture. Attention is also given to school gardens. The common ›ranches are reviewed. Attendance here meets the legal requirement ›f attendance at an institute once in each two years.

The laboratories, library, specimens and all other equipment of he College are at the service of students of this course, affording an ›xcellent opportunity for instruction.

The work is so arranged that teachers desiring to devote all of heir time to Agriculture and Nature Study can do so, while those eachers wishing to devote part of their time to Agriculture and Nature Study and part to the common branches can pursue this ›ourse.

Instruction will be offered in the following subjects, from which ›lection may be made to best meet particular needs:

Elementary Agriculture and Nature Study, Prof. F. L. Stevens.
School Management, Supt. Z. V. Judd.
School Gardens, Supt. F. M. Harper.
Farm Crops, Prof. C. L. Newman.
Farm Animals, Prof. John Michels.
Horticulture, Prof. F. C. Reimer.
Insects, Mr. R. I. Smith.
Poultry, Mr. J. S. Jeffrey.

Arithmetic, English. History, etc., will be taught by the regular nstructors of the College.

No fees are charged for this course. Board may be had at $2.50 a week and lodging at about $1 a week.

Only a limited number can be accommodated. Rooms must be ›ngaged in advance.

For particulars and reservation, write to

F. L. Stevens, *Superintendent*,
WEST RALEIGH.

DONATIONS.

To the Chemistry Department.

Standard Oil Company of New York.—A dozen samples representing crude petroleum and the products obtained.

Armour & Co., of Chicago, Ill.—Some samples of fertilizing materials.

To the Textile Department.

George D. Mayo Machine Company, Laconia, N. H.—One full automatic knitting machine.

Scott & Williams, Philadelphia, Pa.—One ribber.

Beattie Manufacturing Company, Cohoes, N. Y.—One looper.

Wildman Manufacturing Company, Norristown, Pa.—One ribber.

Textile Machinery Company, Boston, Mass.—Dunn flyers for roving frame.

To the Department of Entomology.

The Deming Company, Salem, Ohio.—Two Simplex spray nozzles, one triple spraying attachment.

Dayton Supply Company, Dayton, Ohio.—One "Economy" bucket spray pump, with hose, extension rod and nozzles.

Goulds Manufacturing Company, Seneca Falls, N. Y.—One Goulds brass sprayer and bucket, fitted with hose and spray nozzles.

Friend Manufacturing Company, Gasport, N. Y.—Two "Friend" spray nozzles.

F. E. Myers & Bro., Ashland, Ohio.—One "Little Giant" bucket spray pump, with hose and nozzles; four spray nozzles, different patterns.

Bowker Insecticide Company, Boston, Mass.—One glass jar of "Disparene" (Arsenate of Lead); one glass jar of Bowker's tree soap; one glass jar of "Pyrox" (insect and fungus combination treatment); one can of Bowker's insect emulsion.

American Horticultural Distributing Company, Martinsburg, W. Va. One glass jar "Target Brand" scale destroyer; one glass jar "Target Brand" arsenate of lead; one glass jar "Target Brand" Kree Olio; one 10-pound package "Target Brand" Quick Bordeaux.

Mr. Ervin G. Holt.—The following works of Orison Swett Marden: Success Nuggets; Peace, Power and Plenty; Secret of Achievement; Pushing to the Front; Rising in the World, or Architect of Fate; The Optimistic Life; Every Man a King; He Can Who Thinks He Can.

To the Poultry Department.

Cyphers Incubator Company, Buffalo, N. Y.—Electric incubator and brooder, incubator and colony brooder.

Chas. A. Cyphers, Buffalo, N. Y.—Incubator with automatic moisture regulator.

CATALOGUE OF STUDENTS.

GRADUATES.

Name.	*Post Office.*	*Course.*
Wiley Theodore Clay, B.E.,	Hickory,	M. E.
Percy Leigh Gainey, B.Agr.,	Fayetteville, R. 7,	Agr.
James Kemp Plummer, B.S.,	West Raleigh,	Chem.
Jesse Page Spoon, B.Agr.,	Hartshorn,	Agr.
John Snipes Stroud, B.E.,	Bynum,	Tex.
Vance Sykes, B.E.,	Efland, R. 2,	C. E.
James Clarence Temple, B.Agr.,	Sanford,	Mod. Lang
William Brooks Truitt, B.E.,	Greensboro,	E. E.
Lillian Lee Vaughan, B.E.,	Franklin, Va.,	M. E.
John Lawrence Von Glahn, B.E.,	Wilmington,	C. E.

SENIOR CLASS.

John Allen Arey,	Elmwood,	Agr.
William Herbert Doughty Banck,	Wilmington,	C. E.
John William Barrett, Jr.,	Rocky Mount,	Agr.
Cecil DeWitt Brothers,	Goldsboro,	C. E.
Thorne McKenzie Clark,	Raleigh,	C. E.
Walter Miller Cowles,	Charlotte,	M. E.
John Bennett Craven,	Charlotte,	Chem.
Joseph Frank Davidson,	Statesville,	E. E.
William Samuel Dean,	Oxford,	Tex.
Carlton O'Neal Dougherty,	North, S. C.,	Tex.
Fred Atha Duke,	Raleigh,	C. E.
William Hunt Eaton,	Cleveland,	Agr.
Ralph Ringgold Faison,	Goldsboro,	Agr.
William Alexander Faison,	Goldsboro,	M. E.
Frank Lindsay Foard,	Winston-Salem,	Agr.
Roscoe Loomis Fox,	Waynesboro, Va..	Tex.
Lewis Price Gattis,	Raleigh,	C. E.
Albert Sidney Johnston Goss,	Union, S. C.,	C. E.
Charlie Pool Gray,	Buxton,	C. E.
Andrew Hartsfield Green,	Raleigh,	Agr.
Thomas Delaware Grimshawe,	Montvale,	C. E.
William Roy Hampton,	Plymouth,	Chem.
John William Harrelson,	Lawndale,	M. E.

Name.	*Post Office.*	*Course.*
Gordon Harris,	Raleigh,	E. E.
Thomas Frederick Haywood,	Trenton,	C. E.
Leonard Henderson,	Salisbury,	M. E.
Bascombe Britt Higgins,	Leicester, R. 2,	Agr.
Daniel Harvey Hill, Jr.,	West Raleigh,	Chem.
Wayne Arington Hornaday,	Burlington,	Agr.
John William Ivey,	LaGrange,	M. E.
William Fladger R. Johnson,	Marion, S. C.,	C. E.
Frederick John Jones,	New Bern,	C. E.
James Edward Latham,	Washington,	Agr.
Ralph Long,	Graham,	Agr.
Samuel Huxley McNeely,	Waxhaw,	E. E.
Samuel Macon Mallison,	Washington,	C. E.
William Royden Marshall,	Rocky Mount,	M. E.
Ralph Cecil Mason,	Edenton,	Agr.
Arthur Ballard Massey,	Salisbury, Md.,	Agr.
Walker Morehead Millner,	Leaksville,	Tex.
Benjamin Franklin Montague,	Winston-Salem,	C. E.
William Flaud Morris,	Ashboro,	M. E.
Samuel Loftin Oliver,	Mt. Olive,	E. E.
Julius Monroe Parker,	Hunting Creek,	C. E.
John Gilbert Paschal,	Goldston,	E. E.
Peter Penick Pierce,	Pelham,	C. E.
Paul Miller Pitts,	Concord,	M. E.
James Alexander Powell,	Raleigh,	M. E.
John Moir Price,	Leaksville,	M. E.
Robert Richard Reinhardt,	Stanley Creek,	Agr.
Alfred Pratte Riggs,	Wanchese,	C. E.
Joseph Henry Robertson,	Burlington,	E. E.
James Olin Sadler,	Charlotte, R. 12,	C. E.
Francis Webber Sherwood,	Raleigh,	Chem.
Robert Arnold Shope,	Weaverville,	C. E.
George Gray Simpson,	Norfolk, Va.,	Tex.
William Neville Sloan,	Franklin,	C. E.
Hugh Stuart Steele,	Yadkin Valley,	C. E.
Samuel Fatio Stephens,	Norfolk, Va.,	C. E.
Henry Newbold Sumner,	Hertford,	C. E.
Claude Stratton Tate,	Littleton,	M. E.
Malvern Hill Terrell,	Old Fort,	E. E.
Frank Martin Thompson,	Raleigh,	Tex.

Name.	*Post Office.*	*Course.*
James Edwin Toomer,	Wilmington,	Chem.
Joseph Slaughter Whitehurst,	Elizabeth City,	C. E.
John Spicer Wilson,	Winston,	E. E.
Paul Adams Witherspoon,	Mooresville,	C. E.
Robert Job Wyatt,	Raleigh,	M. E.

JUNIOR CLASS.

James Cicero Albright,	Rock Creek,	E. E.
Alfred Scales Armfield,	Statesville,	Tex.
Robert Kenneth Babington,	Gastonia,	E. E.
Fred McCullough Black,	Mooresville,	E. E.
Thomas Sawyer Bond,	Windsor,	C. E.
Roy Bowditch,	Bakersville,	E. E.
Carl Ray Bradley,	Old Fort,	E. E.
John Benjamin Bray,	Sligo,	C. E.
Thomas Johnson Brevard,	Fairview,	Agr.
Elton Elroy Buck,	Hampton, Va.,	C. E.
John Monroe Council,	Wananish,	E. E.
William Henry Crow,	Monroe,	E. E.
William Earle Davis,	Hiddenite,	E. E.
Thomas Theodore Dawson,	Grifton,	C. E.
James Leonidas Dunn,	Scotland Neck,	Agr.
Walter Frederick Eller,	Berlin,	M. E.
Rufus Eugene Forbis,	West Raleigh,	M. E.
Elmo Vernon Freeman,	Wake Forest,	E. E.
Ransom Eaton Gill,	Raleigh,	E. E.
James Miller Gray,	Cullasaja,	Agr.
Thomas Devin Harris,	Oxford,	C. E.
Frank Hawks,	Kinston,	M. E.
Ernest Albert Haynes,	Raleigh,	C. E.
Edmund Burke Haywood,	Raleigh,	C. E.
Albert Roland Hicks,	Faison,	E. E.
Rufus Williams Hicks, Jr.,	Wilmington,	M. E.
Lyda Alexander Higgins,	Leicester, R. 2,	Agr.
Clinton White Hinshaw,	Winston-Salem,	M. E.
Louie Lee Hood,	Asheville,	C. E.
Robert Frank Jones,	Washington,	C. E.
Clyde Raymond Jordan,	Gulf,	E. E.
Luther Hill Kirby,	Lenoir,	C. E.
Mark Clinton Lasitter,	Snow Hill,	C. E.

Name.	*Post Office.*	*Course.*
Eugene Talmage Lee,	Dunn,	C. E.
Ulphian Carr Loftin,	West Raleigh,	Agr.
Frank Neely McDowell,	Charlotte,	Agr.
Lennox Polk McLendon,	Wadesboro,	Agr.
William Leake Manning,	Henderson,	E. E.
Melvin Solomon Mayes,	Stem,	M. E.
Leon Davis Moody,	East Laporte,	M. E.
Eugene Boise Moore,	Morven,	E. E.
Robert Lee Morgan,	Wilson,	M. E.
Harry Yomans Mott,	Mooresville,	Agr.
William McCormick Neale,	Greensboro,	M. E.
Joe Baxter Parks,	Concord,	E. E.
William Casper Pennington,	Thomasville,	M. E.
William Ransome Phillips,	Dunn,	E. E.
James Bruce Price,	Leaksville,	E. E.
Jay Frederick Robinson,	Hampton, Va.,	C. E.
Carl Collins Sadler,	Charlotte,	C. E.
Earle Aloysius Seidenspinner,	Washington, D. C.,	Chem.
John Waldorf Sexton,	Salem Church,	C. E.
Edwin Harrison Smith,	Weldon,	C. E.
John Francis Speight,	Whitakers,	C. E.
St. Julian Lachicotte Springs,	Georgetown, S. C.,	Agr.
Charles Burt Stainback,	Henderson,	E. E.
Harris Ingram Stanback,	Mt. Gilead,	E. E.
Thomas Barnes Stansel,	Allenton,	Chem.
William Clark Styron,	Washington,	M. E.
Thomas Bryan Summerlin,	Mt. Olive,	Tex.
Lloyd Hurst Swindell,	Raleigh,	Tex.
Thomas Hampton Thompson,	Thomasville,	M. E.
Isaac Norris Tull,	Kinston,	E. E.
Charles Emmette Walton,	Hamilton, Ga.,	E. E.
Howard W. Welles, Jr.,	Poughkeepsie, N. Y.,	E. E.
John Stafford Wilson,	Charlotte,	Tex.
Edward Leigh Winslow,	Hertford,	C. E.

SOPHOMORE CLASS.

Charles Vance Abernethy,	Shelby,	E. E.
Harvey Durward Abernethy,	Hickory,	E. E.
John Erskine Ardrey,	Pineville,	C. E.
William Bailey,	Raleigh,	E. E.
Aubrey Leland Baker,	Raleigh,	Tex.

Name.	*Post Office.*	*Course.*
Robert Jones Barbee,	Raleigh,	M. E.
Tollie Chester Barber,	Pinnacle,	Tex.
John Mann Beal,	Rocky Mount, R. 3,	Agr.
Charles Edward Bell,	Kinston,	Chem.
Hinton Quinerly Best,	Grifton,	Chem.
John Bingham Boothe,	Oxford,	E. E.
Rufus Tucker Boylan,	Raleigh,	Agr.
Joseph Malcolm Bradfield,	Charlotte,	E. E.
Joel Edward Brown,	Pendleton, S. C.,	Agr.
James Howard Brown,	Charlotte, R. 4,	Agr.
Guy Kedar Bryan,	Tampa, Fla.,	C. E.
Kit Bryan,	Catherine Lake, R. 1,	C. E.
Henry Carl Buchan,	Manly,	Agr.
Von Porter Byrum,	Charlotte,	M. E.
Henry Caleb Clay,	Hickory,	M. E.
Ralph Clement,	Mocksville,	C. E.
William Hurd Davis,	Marshville, R. 1,	E. E.
Edwin Gray Deans,	Wilson,	Tex.
Edwin Sexton Dewar,	Raleigh,	M. E.
Clifton Abraham Dukes,	Branchville, S. C.,	Agr.
John Ivey Eason,	Stantonsburg, R. 1,	Agr.
Earl Montier Evans,	Raleigh,	M. E.
Robert Stackhouse Fairly,	Laurinburg,	Agr.
James Grey Fennell,	Wilmington,	E. E.
Malthus Reamer Freeman,	Taylor,	Agr.
George Winbury Gillette,	Marines,	E. E.
Robert Walter Graeber,	Concord,	Agr.
Charles Ganzer Hall,	Wilmington,	Tex.
William James Hall,	Clemmons,	M. E.
Grover Cleveland Hardesty,	Morehead City,	Agr.
Russell Poindexter Hewlett,	Wilson,	E. E.
David Raymond Hinkle,	Lexington,	Tex.
Ralph Cleveland Hunter,	East Laporte,	Agr.
Eugene Johnston,	Mooresville,	Chem.
George Shirley Kilpatrick,	Kinston,	Tex.
Richard Henry Lewis, Jr.,	Kinston,	E. E.
Thomas Seigle Linton,	Raleigh,	E. E.
Eugene Richard McCracken,	Graham,	Tex.
Sidney McDonald,	Wilmington,	C. E.
Joseph Jenkins Mackay,	Raleigh,	E. E.
Charles McKimmon,	Raleigh,	Chem.

Name.	*Post Office.*	*Course.*
Charles Richard McManaway,	Charlotte,	M. E.
Jacob Lee Martin,	Graham,	C. E.
Robert Lee Morrison,	Concord,	C. E.
Joel William Moye,	Farmville,	Agr.
Fred Taylor Peden, Jr.,	Wilkesboro,	Agr.
John Taylor Peden, Jr.,	Wilkesboro,	E. E.
Silas Bruce Phifer,	Cleveland, R. 2,	E. E.
Paul Nathaniel Pittenger,	Raleigh,	E. E.
Josephus Plummer Quinerly,	Grifton,	Agr.
John Wesley Rollinson,	Elizabeth City,	E. E.
George Romulus Ross,	Ashboro,	Agr.
Graeme William Ross,	Charlotte,	E. E.
John Leonidas Scott, Jr.,	Graham,	Tex.
John Morgan Sherman,	Ash Grove, Va.,	Agr.
Orin Morrow Sigmon,	Hickory,	M. E.
Ernest Lytch Smith,	Laurinburg,	Agr.
Charlie Augustine Speas,	Cana, R. 2,	C. E.
Samuel Adison Spencer,	Ashboro,	Agr.
Lucius Esek Steere, Jr.,	Charlotte,	E. E.
George Logan Thompson,	Goldsboro,	E. E.
Thomas Whitmell Thorne,	Littleton,	M. E.
William Purcell Thurston,	Burlington,	C. E.
Fred Goode Tucker,	Henderson,	C. E.
Edwin Wadsworth,	Charlotte,	E. E.
James Hunter Watson,	Raleigh,	Chem.
Walter Booker Winfree,	Wadesboro, R. 3,	Agr.
Marion Fuller Wyatt,	Raleigh,	M. E.

FRESHMEN.

Neily Orman Alexander,	Matthews, R. 17,	Agr.
John Edd Beaman,	Clinton,	C. E.
James Plummer Betts,	Raleigh,	E. E.
William Hunter Bingham,	Concord,	E. E.
William Edward Blair, Jr.,	Buffalo, N. Y.,	Agr.
Allison Hodges Bond,	Fayetteville,	M. E.
Edward Bostian,	Salisbury,	C. E.
Charles Carroll Bost, Jr.,	Hickory,	C. E.
Clayton Edward Brown,	Chocowinity,	C. E.
Frank Warner Brown,	Greenville,	E. E.
Stephen Cole Bruner,	Raleigh,	Chem.
Earl Pittman Bruton,	Kinston,	E. E.

Name.	*Post Office.*	*Course.*
William Caldwell,	Mt. Ulla, R. 1,	Agr.
Price Caldwell,	Huntersville, R. 23,	E. E.
Cecil Robert Cobb,	Greenville,	E. E.
Daniel Wade Collins,	Bryson,	M. E.
Thomas Talleyrand Cresswell,	Charlotte,	E. E.
Ralph Campbell Deal,	Concord,	E. E.
Ernest Cofield Derby,	Rocky Mount,	C. E.
James Horton Doughton,	Guilford College,	M. E.
Joseph Jenkins Dunford,	Macclesfield,	Agr.
Percy Bell Ferebee,	Elizabeth City,	E. E.
William Haywood Graham, Jr.,	Rowland,	Tex.
John Krause Gunn,	Tampa, Fla.,	E. E.
Don Wood Hanks,	New Bern,	M. E.
Robert McKenzie Hardison,	Morven,	C. E.
Harry Hartsell,	Asheville,	E. E.
James Murphey Hines,	Kinston,	Tex.
Willis Askew Holding,	Raleigh,	Chem.
Sidney Willard Holman,	Raleigh,	E. E.
Samuel Benjamin Howard,	Morganton,	C. E.
Ralph Wilkinson Howell,	Belhaven,	Agr.
John Ray Ivey,	New London,	E. E.
William Lee Jenkins,	Aulander,	C. E.
John Gordon Kellogg,	Sunbury,	Agr.
John Raymond Kiker,	Polkton,	Agr.
Sam Jones Kirby,	Selma, R. 1,	Agr.
Marion Bryan Koonce,	Kinston,	M. E.
John Smedes Knox,	Raleigh,	Chem.
Carl Joshua Lambeth,	Thomasville,	M. E.
Winston Elijah Lawrence,	Raleigh, R. 4,	Agr.
Curtis Williams Lee,	Monroe,	M. E.
Lawrence Tyson Lee,	Raleigh,	E. E.
Edwin Payne Lore,	Concord,	E. E.
James Edward McGee,	Mt. Olive,	Tex.
Thomas Hunt Mackie,	Yadkinville,	E. E.
Arthur McKimmon,	Raleigh,	M. E.
Neill McQueen,	Fayetteville,	Tex.
John Gideon Matthews,	Blackville, S. C.,	Agr.
Henry Bascom Mercer,	Wilmington,	E. E.
Ronald Earl Mewborn,	Kinston,	M. E.
Simon Turner Mitchiner,	Garner,	M. E.

Name.	*Post Office.*	*Course.*
Andrew Weaver Moody,	East Laporte,	M. E.
George Frank Moore,	Scotland Neck,	Tex.
John Isham Moore,	Statesville,	C. E.
James Richard Mullen,	Charlotte,	E. E.
Harry Peachey Murray,	Charlotte,	E. E.
William Robert Murray,	Charlotte,	C. E.
Charles McKee Newcomb,	Raleigh,	C. E.
Leonard Oettinger,	Kinston,	Tex.
Charlie Washington Owens,	Saratoga, R. 1,	C. E.
Millard LaFayette Parker,	Raleigh,	E. E.
Alexander Holladay Pickel,	Raleigh,	E. E.
Bryant Monroe Potter,	Southport,	C. E.
Wade Hampton Reinhardt,	Stanley,	Agr.
Louis Napoleon Riggan,	Raleigh,	C. E.
John Calhoun Riddick,	Scotland Neck,	Tex.
Ivey Goodman Riddick,	Youngsville,	C. E.
Samuel Edward Sanders,	Raleigh,	Tex.
William Bernstein Schwartz,	Raleigh,	C. E.
David Walter Seifert,	New Bern,	C. E.
Murray Mansfield Sessoms,	Windsor,	E. E.
Fleming Bates Sherwood,	Raleigh,	Chem.
William Talmage Shull,	Beaufort,	C. E.
Fenner Smith,	Wilson,	E. E.
James McCree Smith,	Rutherfordton,	C. E.
Orus Wilder Smith,	Kipling,	M. E.
Edward Pinkney Speer,	Boonville,	E. E.
Davis Bryant Spiers,	Como,	M. E.
Talmage Holt Stafford,	West Raleigh,	Agr.
Clarence Alexander Stedman,	Greensboro,	E. E.
Needham Bryan Stevens,	Goldsboro,	Agr.
Gordon Bennett Stewart,	Charlotte,	Tex.
David Bruce Sturgill,	Piney Creek,	C. E.
Morgan Franklin Sugg,	Kinston,	Tex.
William Perry Sugg,	Princeton,	C. E.
Arthur Willis Taylor,	Raleigh,	M. E.
Culver Murat Taylor,	Tarboro,	E. E.
John Sam Thompson,	Lewiston,	Agr.
Grover Cleveland Tilley,	Rougemont,	M. E.
George Reid Trotter,	Charlotte,	C. E.
David Walter Turner,	Statesville,	Agr.

Name.	*Post Office.*	*Course.*
Charles J. Valaer,	Winston-Salem,	C. E.
Robert Terry Wade,	Morehead City,	C. E.
Archie Wakefield,	Charlotte,	E. E.
Harry Moore Walton,	Morganton,	E. E.
Earle Lampley Watson,	Cheraw, S. C.,	Agr.
Hugh Powell Whitted,	Efland, R. 1,	C. E.
Milton Ashley Wilder,	Method,	Agr.
Wallace Woodson Williams,	Raleigh,	Chem.
Wilfred T. Willson,	Gold Hill,	E. E.

TWO-YEAR COURSES.

First Year.

Derbin Linwood Allen,	Wake Forest,	M. A.
Malvern Hill Bell,	Wilmington,	M. A.
Robert Bencini,	High Point,	Tex.
Turner Bond Cooper,	Windsor,	M. A.
John C. Cosby,	Asheville,	Tex.
Liston Lloyd Dail,	Chinquepin,	M. A.
Arthur Craford Deits,	Mexico City, Mex.,	M. A.
Arthur Leroy Faulkner,	Smithfield,	Tex.
Daniel Burnie Floyd,	Fairmont,	M. A.
Pelham Agnew Fox,	Greenville, Tenn.,	Tex.
Eckie Haywood Gattis,	Raleigh,	M. A.
John Means Harden, Jr.,	Winnsboro, S. C.,	M. A.
William Waldo Hartness,	Statesville,	M. A.
Leo Dabney Heartt, Jr.,	Raleigh,	M. A.
Frank Henry Houck,	Raleigh,	M. A.
Thomas Jones Hoskins,	Edenton,	M. A.
Henry Franklin Jones,	Kinston,	Tex.
John H. Jones,	Timberlake,	M. A.
Boardman Allston Lide,	Rockingham,	M. A.
Thomas Stockton Lucas,	Plymouth,	M. A.
James Douglas Lytch,	Laurinburg,	M. A.
James Edison Lytch,	Rowland,	Tex.
Henry Clay McKenzie,	Laurinburg,	M. A.
Benjamin Harvey Parker,	Lasker,	M. A.
James Marcus Parker,	Lasker,	M. A.
Edgar Bragg Price,	Bath,	M. A.
Jacob Boyd Ross,	Blacksburg, S. C.,	M. A.

Name.	*Post Office.*	*Course.*
Zeb Roscoe Saine,	Lincolnton,	M. A.
Charles Wayland Spruill, Jr.,	Quitsna,	Tex.
Robert Griffin Stephens,	Atlanta, Ga.,	M. A.
Henry Battle Tice,	Wadesboro,	M. A.
Robert Grady White,	Concord,	Tex.
Tom Brem Williams,	Mooresville,	M. A.
George Edward Wyatt,	Burlington,	M. A.
John William Wyatt,	Burlington,	M. A.

TWO-YEAR COURSES.

Second Year.

Joe Windley Buchanan,	Roper,	M. A.
Fay Allen DesPortes,	Winnsboro, S. C.,	M. A.
Harry Mead Hodges,	LaGrange,	M. A.
John Emsley Lee,	Monroe,	Tex.
Nathaniel Rayborn Martin,	Danbury,	M. A.
Gorman McPhail,	Clinton, R. 5,	M. A.
Robert William Powell,	Goldsboro,	M. A.

ONE-YEAR COURSE IN AGRICULTURE.

Charles Keene Boone,	Lumberton.
Rudolph Richard Carlyle,	Lumberton.
John Stanly Dixon,	Grimesland.
Joseph Oscar Green,	Franklinton.
William Henry Kern,	Salisbury.
Leon Henry Lamb,	Garland.
Lewis Lesly Pitt,	Rocky Mount.
Ernest Linwood Sherlock,	Elizabeth City.
James Charles Small,	Elizabeth City.
Robert W. Small,	Washington.
Hugh Kemp Sullivan,	Lincolnton.
Elbert Moye Tyson,	Greenville.
Edny Willis,	Lawndale, R. 1.
Arthur William Winecoff,	Concord.
Matt Ransom Yarbrough,	Monroe.

SPECIAL STUDENTS.

Name.	*Post Office.*	*Course.*
Thomas William Adickes,	Raleigh,	Zoology.
Othar Alvin Barringer,	Mt. Pleasant,	Tex.
Henry Flournoy Morton,	Rocky Mount,	C. E.
Ralph Ingram Smith,	Raleigh,	Mod. Lang.
Herbert Nathaniel Steed,	Steeds,	Tex.

IRREGULAR STUDENTS.

Thomas Kincaid Bruner,	Raleigh,	Tex.
Sharpe Ireland,	Winston-Salem,	M. E.
Fred Barnet Wheeler,	Archdale,	M. E.

WINTER SHORT-COURSE STUDENTS, 1909.

Name.	*Town.*	*County.*	*State.*
John Armstrong,	McRae,	White,	Ark.
Samuel Elijah Baker,	China Grove,	Rowan,	N. C.
Ralph Graves Bryant,	Matthews,	Mecklenburg,	N. C.
Junius P. Chamblee,	Spring Hope, R. 4,	Nash,	N. C.
Walter Gaston Callihan,	Bladenboro,	Bladen,	N. C.
Charles Talmage Cobb,	Tryon,	Polk,	N. C.
Ernest Lenwood Deans,	Gatesville,	Gates,	N. C.
Eugene T. Ferrill,	Raleigh,	Wake,	N. C.
Charles C. Fortenberry,	Cleveland Mills,	Cleveland,	N. C.
John Austin Frans,	Brim,	Surry,	N. C.
James Thomas Garvey,	Beaver Creek,	Ashe,	N. C.
James Floyd Gillespie,	China Grove,	Rowan,	N. C.
Clarence McLeod Gillean,	Woodleaf,	Rowan,	N. C.
Silas Martin Gordon,	Pinnacle,	Stokes,	N. C.
Lawrence Gwynn,	Locust Hill,	Caswell,	N. C.
Leonard Parks Hardy,	Seven Springs,	Wayne,	N. C.
Andrew Hayes,	Wilson,	Wilson,	N. C.
Nathan Hayes,	Wilson,	Wilson,	N. C.
Edward Verlin Hill,	Westfield,	Surry,	N. C.
James Alfred Jones,	Southern Pines,	Moore,	N. C.
Allen Henry Alexander Lee,	Dunn,	Sampson,	N. C.
William Talmage Linney,	Hiddenite,	Alexander,	N. C.
Neb McCallum,	Summerfield,	Rockingham,	N. C.
Thomas J. McCallum,	Summerfield,	Rockingham,	N. C.
Herman McLawhorn,	Winterville,	Pitt,	N. C.
Angus McNeil,	Laurinburg,	Scotland,	N. C.
Albert Gannaway Massie,	Roseland,	Nelson,	Va.
Marshall Paulus Massie,	Bryant,	Nelson,	Va.

Name.	*Town.*	*County.*	*State.*
Adam Oscar Talmage Nesbit,	Woodleaf,	Rowan,	N. C.
Frank Willard Pulver,	Chatham,	Columbia,	N. Y.
Seth Exum Speight,	Whitakers,	Edgecombe,	N. C.
George A. Sikes,	Greensboro,	Guilford,	N. C.
Floy Michael Spoon,	Hartshorn,	Alamance,	N. C.
Marvin W. Taylor,	Grifton,	Lenoir,	N. C.
Itimous Thad Valentine,	Spring Hope,	Nash,	N. C.
Marion Dare Wetmore,	Woodleaf,	Rowan,	N. C.
William Carl Whitaker,	Letha,	Franklin,	N. C.
E. O. Young,	Kittrell,	Vance,	N. C.

MAY SCHOOL FOR TEACHERS.

Name.	*Post Office.*
Irene Johnson Cook (Mrs.),	Raleigh.
Maggie Irma Ellis,	Cary.
Annie Elizabeth Grady,	Mount Olive.
Leata Marie Hartge,	Raleigh.
Myra Lewis Hunter,	Raleigh.
Kenneth H. McIntyre,	Cary.
Dora Brent Overton,	Franklinton, R. 1.
Vera Ray,	Raleigh, R. 7.
Emily Sanders Smith,	Smithfield, R. 1.
Lina Pegram Stephenson,	Carl.
Dora Elizabeth Tuttle,	Lenoir.
Lessie Beulah Weathers,	Knightdale, R. 1.
Lydia Estelle Yates,	Cary.
Mary Stella Yonts,	Lexington.

SHORT-TERM NIGHT SCHOOL FOR TEXTILE WORKERS.

J. H. Allen,	Raleigh.
M. T. Bennett,	Raleigh.
N. T. Brown,	Raleigh.
Albert Campbell,	Raleigh.
L. M. Campbell,	Raleigh.
J. N. Cox,	Raleigh.
S. A. Crutchfield,	Raleigh.
W. J. Davis,	Raleigh.
M. L. McLean,	Raleigh.
E. M. Murray,	Raleigh.
W. N. Murray,	Raleigh.
A. C. West,	Raleigh.

NINETEENTH ANNUAL COMMENCEMENT.

MAY 27, 1908.

DEGREES CONFERRED.

BACHELORS OF AGRICULTURE.

Frank Hamilton Brown,
Minnic Luther Eargle,
Benjamin Troy Ferguson,
Percy Leigh Gainey,
John David Grady,
David John Middleton,
Jesse Page Spoon.

BACHELORS OF SCIENCE.

John Camillus App,
Frank Oscar Baldwin,

BACHELORS OF ENGINEERING.

In Civil Engineering.

John Leland Becton,
Harwood Beebe,
Asa Gray Boynton,
Alvin Deans Dupree,
Raymond Rowe Eagle,
Isaac Henry Farmer,
Junius Talmage Gardner,
Seth Mann Gibbs,
Moses Henry Gold,
Dorsey Yates Hagan,
Herbert William Kueffner,
Claude Milton Lambe,
Clarence Talmage Marsh,
Lawrence Lyon Pittman,
Ruble Isaac Poole,
Thomas Milton Poyner,
Edgar English Smith,
James Lawrence Smith,
John Lawrence Von Glahn,
Royall Edward White,
John C. Williams,
John Franklin Ziglar.

In Electrical Engineering.

George Francis Bason,
William Lamar Black,
William Bryant Burgess,
Lewellyn Hill Couch,
Maurice Mordecai Glasser,
John Henry Little,
George Lafayette Lyerly,
Benjamin Franklin Pittman,
Woodfin Bradsher Yarbrough.

In Mechanical Engineering.

John Harvey Bryan,
James Alexander Powell.

In Textile Industry.

CLAUD COUNCIL DAWSON,
MAURICE HENDRICK,
CHARLES EDWARD LATTA,
DAVID LINDSAY,
HARRY ALEXANDER POWELL,
JOHN SNIPES STROUD.

WELDON THOMPSON ELLIS, Course in Mechanical Engineering, Mechanical Engineer.

WILLIAM CARLYLE ETHERIDGE, Course in Agriculture, Master of Science.

THOMAS FRANKLIN PARKER, Course in Agriculture, Master of Science.

JAMES CLARENCE TEMPLE, Course in Agriculture, Master of Science.

ARTHUR JOHN WILSON, Course in Chemistry, Master of Science.

HONORS.

HONORS IN SCHOLARSHIP.

For Four Years.

F. H. BROWN,
R. R. EAGLE,
M. L. EARGLE,
H. W. KUEFFNER,
E. E. SMITH.

FOR 1907-08.

Senior Class.

J. L. BECTON,
F. H. BROWN,
J. H. BRYAN,
R. R. EAGLE,
M. L. EARGLE,
H. W. KUEFFNER,
C. T. MARSH,
T. M. POYNER,
E. E. SMITH,
J. L. VON GLAHN,
J. C. WILLIAMS.

Junior Class.

J. W. HARRELSON,
J. M. PARKER,
W. N. SLOAN,
H. N. SUMNER.

Sophomore Class.

T. D. HARRIS,
H. P. MOSELEY,
C. E. WALTON.

Freshman Class.

C. E. BELL,
J. H. BROWN,
R. W. GRAEBER,
J. P. QUINERLY,
W. P. THURSTON.

HONORS FOR PUNCTUALITY.

J. L. Becton,
W. B. Burgess,
E. E. Fulp,
Paul Hendren,
C. M. Lambe,
A. W. Moody,
J. M. Parker,
P. P. Pierce,
R. I. Poole.

FRESHMAN PRIZES FOR AGRICULTURAL LABOR.

First Prize, $10.00, ... J. W. Moye.
Second Prize, $5.00, ... R. W. Graeber.

MEDALS AWARDED.

National Assn. of Cotton Manufacturers, . . Maurice Hendrick.
Lowenstein Chemical Medal, ... T. D. Harris.

REGISTER OF ALUMNI.

CLASS OF 1893.

Name.	*Degree.*	*Address.*
ROBERT WILSON ALLEN,	B. E.,	Sanford, N. C.
Superintendent of Graded School and County Superintendent.		
SAMUEL ERSON ASBURY,	B. S.,	College Station, Tex.
M. S. 1896. First Assistant State Chemist. On nine months' leave at Harvard University, Cambridge, Mass.		
HENRY EMIL BONITZ,	B. E.,	Wilmington, N. C.
Architect.		
FRANK FULLER FLOYD,	B. E.,	Knoxville, Tenn.
Vice President and Sales Manager Jellico Coal Mining Co.		
CHARLES DUFFY FRANCKS,	B. E.,	Richlands, N. C.
Superintendent of Graded Schools.		
EDWARD MOORE GIBBON,	B. E.,	Jacksonville, Fla.
William W. Lyon Engineering Co.		
GEORGE PENDER GRAY,	B. S.,	Tarboro, N. C.
Commercial Traveler Read Phosphate Co., of Nashville, Tenn.		
CHARLES BOLLING HOLLADAY,	B. E.,	Wilmington, Del.
The Dupont Co.		
WILLIAM MCNEIL LYTCH,	B. E.,	Laurinburg, N. C.
Superintendent Laurinburg Oil Co.		
JAMES WILLIAM MCKOY,	B. E.,	Black Mountain, N. C.
Civil Engineer and Merchant.		
WALTER JEROME MATHEWS,	B. E.,	Goldsboro, N. C.
Chief Engineer for the Eastern N. C. Asylum for Insane.		
FRANK THEOPHILUS MEACHAM,	B. S.,	Statesville, N. C.
M. S. 1894. Superintendent State Test Farm.		
CARL DEWITT SELLARS,	B. E.,	Greensboro, N. C.
Cone Export and Commission Co.		
CHARLES EDGAR SEYMOUR,*	B. S.,	Raleigh, N. C.
BUXTON WILLIAMS THORNE,	B. E.,	Holly Springs, Miss.
Cashier Peoples Bank.		
WILLIAM HARRISON TURNER,	B. E.,	Winston-Salem, N. C.
Wholesale Dealer in Mill Feed and Grain.		
CHARLES BURGESS WILLIAMS,	B. S.,	West Raleigh, N. C.
M. S. 1896. Director of N. C. Experiment Station.		
LOUIS THOMAS YARBROUGH,	B. E.,	Raleigh, N. C.
Despatching Clerk Raleigh Post Office.		
SAMUEL MARVIN YOUNG,	B. E.,	Raleigh, N. C.
Salesman Richmond Hardware Co.		

*Deceased.

It is the purpose of the College to keep in touch with the Alumni. Please notify the Registrar promptly of any change of address.

CLASS OF 1894.

Name.	*Degree.*	*Address.*
CHARLES EDWARD CORPENING,	B. E.,	Lenoir, N. C., R. F. D. 3.

Farmer and Dealer in Lumber.

DAVID COX, B. E., Hertford, N. C.

Surveyor; Farmer; Lumberman; also in employ of Yeopim Lumber Co.

ROBERT DONNELL PATTERSON, B. S., Chase City, Va.

M. S. 1898. Cashier First State Bank.

CHARLES PEARSON, B. E., New York, N. Y.

General Contracting and Engineering Co. Home Address, Raleigh, N. C.

ZEBBIE GEORGE ROGERS, B. E., Washington, D. C.

Resident Engineer Baltimore and Ohio Railroad.

JOHN HYER SAUNDERS, B. E., Rocky Mount, N. C.

Locomotive Engineer Atlantic Coast Line Railway.

BENJAMIN FRANKLIN WALTON, B. S., Raleigh, N. C., R. F. D. 1.

Farmer.

JOHN MCCAMY WILSON, B. E., Spartanburg, S. C.

Secretary and General Manager of Russel-Compton Co., Founders and Machinists.

CLASS OF 1895.

THOMAS MARTIN ASHE,* B. E., Raleigh, N. C.

JAMES ADRIAN BIZZELL, B. S., Ithaca, N. Y.

M. S. 1900. Ph.D. Cornell University. Assistant Professor. Soil Investigations N. Y. State College of Agriculture.

JOHN ISHAM BLOUNT, B. E., Birmingham, Ala.

C. E. 1897. M. E. Cornell University. Proprietor J. I. Blount & Co., Machinery Merchants.

JAMES WASHINGTON BRAWLEY, B. S., Greensboro, N. C.

Superintendent of Agents Southern Life and Trust Co.

WILLIAM AUSTIN BULLOCK, B. S., Amsterdam, Ga.

Superintendent of Tobacco Plantation A. Cohn & Co.

DAVID CLARK, B. E., Charlotte, N. C.

M. E. 1896. C. E. 1897. M. E. Cornell University 1898. Editor American Textile Manufacturer.

GEORGE WASHINGTON CORBETT, JR., B. E., Currie, N. C., R. F. D. 2.

Corbett & Corbett, Manufacturers of Lumber.

EDWIN SPEIGHT DARDEN, B. S., Wilson, N. C.

Warehouseman and Farmer.

WILLIAM KEARNEY DAVIS, JR., B. E., Marion, S. C.

Superintendent Marion Manufacturing Co.

---

* Deceased.

Name.	*Degree.*	*Address.*
JOSEPH CHARLES DEY,	B. S.,	Norfolk, Va.
Produce Broker.		
LEE BORDEN ENNETT,	B. S.,	Cedar Point, N. C.
Farmer and County Superintendent of Schools.		
ISAAC HENRY FAUST,	B. E.,	Ramseur, N. C.
Contractor and Farmer.		
CHARLES WILLIS GOLD,	B. S.,	Raleigh, N. C.
Secretary and Superintendent of Agencies Jefferson Standard Life Insurance Co.		
WILLIAM HENRY HARRIS,	B. E.,	Pawtucket, R. I.
M. E. 1896. Treasurer and Agent Slater Manufacturing Co.		
CHRISTOPHER MILLER HUGHES,	B. E.,	Fayetteville, N. C.
B. S. 1899. Vice President Cumberland Savings and Trust Co.		
MALCOLM BEALL HUNTER,	B. E.,	Not heard from.
Home address, Charlotte, N. C.		
SAMUEL CHRISTOPHER MCKEOWN,	B. E.,	Sumter, S. C.
Sumter Telephone Manufacturing Co.		
MANN CABE PATTERSON,	B. E.,	Durham, N. C.
Die Maker Byrd Manufacturing Co.		
ABRAM HINMAN PRINCE,	B. S.,	San Augustine, Tex.
Tobacco Farmer.		
CHARLES MARCELLUS PRITCHETT,	B. E.,	Manila, P. I.
C. E. 1896. Engineer U. S. Engineer's Office, Department of Highway Construction.		
VICTOR VASHTI PRIVOTT,	B. E.,	Suffolk, Va.
Merchant.		
HOWARD WISWALL, JR.,	B. E.,	Charleston, S. C.
Engineer and Timberman Midland Timber Co.		
CHARLES GARRETT YARBROUGH,	B. E.,	Chicago, Ill.
Construction and Electrical Engineer Western Electric and Manufacturing Co.		

CLASS OF 1896.

DANIEL ALLEN,	B. S.,	Raleigh, N. C.
Traveling Salesman.		
GEORGE STRONACH FRAPS,	B. S.,	College Station, Tex.
Ph. D. Johns Hopkins University. State Chemist and Chemist Texas Experiment Station.		
MARION JACKSON GREEN,	B. S.,	Charlotte, N. C.
Pattern Maker Cole Manufacturing Co.		
JOHN HOWARD,	B. S.,	Middleboro, Ky.
Lawyer and Engineer.		
WILLIAM COLBERT JACKSON,	B. S.,	Middlesex, N. C.
Merchant and Farmer.		

Name.	*Degree.*	*Address.*
ROBERT GRAHAM MEWBORNE,	B. S.,	Louisville, Ky.
Chemist Kentucky Tobacco Product Co.		
LEVI ROMULUS WHITTED,	B. S.,	Washington, D. C.
C. E. 1897. Assistant Chief Structural Engineer U. S. Treasury Department.		
HENRY LLOYD WILLIAMS,	B. S.,	Cofield, N. C.
Manager of Sawmill, Cofield Manufacturing Co.		

CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE, B. S., Garner, N. C.
M. D. Baltimore Medical College. Physician.

JOHN WILLIAM CARROLL, B. S., Wallace, N. C.
M. D. University of Maryland 1903. Physician.

CHARLES EDWARD CLARK, B. S., Charlotte, N. C
Superintendent of Demonstration Work in Mecklenburg County, U. S. Department of Agriculture.

WM. ALEXANDER GRAHAM CLARK, B. S., Raleigh, N. C.
M. E. 1899. M. E. Cornell University. Special Agent Department of Commerce and Labor, U. S. A.

NICHOLAS LOUIS GIBBON, B. S., Biddeford, Me.
Mill Engineer Saco and Pettee Machine Shops.

CEBURN DODD HARRIS, B. S., Louisville, Ky.
A. M. Cornell University. Strater Bros. Tobacco Co.

JERE EUSTIS HIGHSMITH, B. S., Parkersburg, N. C.
Farmer.

CLYDE BENNETT KENDALL, B. S., Washington, D. C.
Assistant Topographer U. S. Geological Survey.

SYDNEY GUSTAVUS KENNEDY, B. S., Sanford, Fla.
Round House Foreman Atlantic Coast Line Railroad Co.

JOSEPH LAWRENCE KNIGHT, B. S., Dewey, Fla.
Pas Manufacturing Co., Naval Stores.

WALTER JONES MCLENDON, JR., B. S., Marshall, N. C.
President and General Manager Capitola Manufacturing Co.

REPTON HALL MERRITT, B. S., Raleigh, N. C.
Secretary and Treasurer Powell & Powell (Incorporated).

ALBERT HICKS OLIVER, B. S., Eastover, S. C.
Farmer and Plantation Manager H. S. Clarke.

HUGH WILLIAMS PRIMROSE,* B. S., Raleigh, N. C.
M. S. 1900.

WILLIS HUNTER SANDERS, B. S., Roanoke Rapids, N. C.
Superintendent of Power Plant Roanoke Navigation and Water Power Co.

* Deceased.

Name.	*Degree.*	*Address.*
Thomas Jehu Smithwick,		Mt. Airy, N. C.
Chief Engineer and Electrician N. C. Granite Corporation.		
Jordan Lea Watson,	B. S.,	Atlanta, Ga.
Southern Manager Allis-Chalmers Co.		
Bradley Jewett Wootten,*	B. S.,	Wilmington, N. C.

CLASS OF 1898.

Dorsey Frost Asbury, B. S., Washington, D. C.
Draftsman Naval Gun Factory.

Sidney Hamilton Beck, B. S., Washington, D. C.
Marine Engine and Boiler Draftsman Navy Department.

Anson Elikem Cohoon, B. S., Eugene, Ore.
Forest Supervisor U. S. Department of Agriculture.

Hugh McCullom Curran, B. S., Manila, P. I.
Forest Service. Home address, Westboro, Mass.

Benjamin Carey Fennell, B. S., Atlanta, Ga.
M. E. 1900. Manager Southern Office American Blower Co.

Alpheus Rountree Kennedy, B. S., Quincy, Mass.
Draftsman Fore River Shipbuilding Co.

Frederick Creecy Lamb, B. S., El Paso, Tex.
City Chemist and Bacteriologist. Home address, Elizabeth City, N. C.

Edwin Bentley Owen, B. S., West Raleigh, N. C.
Registrar N. C. College of Agriculture and Mechanic Arts.

B. Moore Parker, B. S., West Raleigh, N. C.
Assistant Professor of Textile Industry North Carolina College of Agriculture and Mechanic Arts.

Numa Reid Stansel, B. S., Washington, D. C.
Engineering Inspector U. S. Treasury Department.

Teisaku Sugishita, B. S., Kokufu, Japan.
Civil Engineer. Not heard from.

George Frederick Syme, B. S., Dante, Va.
C. E. 1907. Resident Engineer Carolina, Clinchfield and Ohio Railway.

CLASS OF 1899.

Wm. Davidson Alexander, Jr., B. S., High Point, N. C.
Superintendent City Water and Public Works of High Point.

Ira Wilson Barber, B. S., Mt. Airy, N. C.
Superintendent Light and Power Plant and Water Works.

* Deceased.

Name.	*Degree.*	*Address.*

JOHN HENDERSON BIRDSONG, B. S., Chicago, Ill.
Chemist The National Malleable Castings Co.

FRANCIS MARION FOY,* B. S., Scott's Hill, N. C.

ALBERT SIDNEY LYON, B. S., Rocky Mount, N. C.
Superintendent Public Works City of Rocky Mount.

CARROLL LAMB MANN, B. S., C. E., West Raleigh, N. C.
Civil Engineer and Instructor in Civil Engineering N. C. College of Agriculture and Mechanic Arts.

O'KELLY W. MYERS, B. S., Mantazilla, P. I.
Civil Service. Home address, Washington, N. C.

EUGENE LEROY PARKER, B. S., Mt. Pleasant, Tenn.
Manager E. L. Parker & Co. Laboratory.

EUGENE GRAY PERSON, B. S., Macon, Ga.
Train Despatcher Central of Georgia Railway.

FREDERICK ERASTUS SLOAN, B. S., Raleigh, N. C.
District Agent The Security Life and Annuity Co. of Greensboro, N. C.

ANDREW THOMAS SMITH, B. S., Camden, N. J.
Draftsman in charge New York Shipbuilding Co.

ALEXIS PRESTON STEELE, B. S., Statesville, N. C.
Mechanical Engineer J. C. Steele & Sons.

WILLIAM ANDERSON SYME, B. S., Raleigh, N. C.
M. S. 1903. Ph. D. Johns Hopkins 1906. State Oil Chemist.

HUGH WARE, B. S., Birmingham, Ala.
Chemist Decatur Car Wheel and Manufacturing Co.

CLAUDE B. WILLIAMS, B. S., Elizabeth City, N. C.
Physician.

CLASS OF 1900.

KEMP ALEXANDER, B. E., Marion, N. C.
Superintendent Marion Knitting Mills.

LESLIE LYLE ALLEN, B. E., Spartanburg, S. C.
Cotton Broker Firm of Cooke & Allen.

ROBERT LINN BERNHARDT, B. S., Salisbury, N. C.
Salisbury Hardware and Furniture Co.

LESLIE GRAHAM BERRY, B. E., Des Moines, Ia.
Contracting Engineer Des Moines Bridge and Iron Works.

JAMES HARRY BUNN, B. E., Henderson, N. C.
Assistant Secretary Henderson Cotton Mills.

SAMUEL MERRILL HANFF, B. S., Duke, N. C.
Episcopal Minister.

GEORGE ROLAND HARRELL, B. S., Grasselli, N. J.
Manufacturing Foreman The Graselli Chemical Co.

* Deceased.

Name.	*Degree.*	*Address.*
HENRY ALLEN HUGGINS,	B. S.,	Wilmington, N. C.
Bookkeeper George W. Huggins, Jeweler.		
GARLAND JONES, JR.,	B. S.,	Fort Worth, Tex.
Chemist Armour & Co.		
LOUIS HENRY MANN,	B. E.,	Washington, N. C.
D. D. S. University of Maryland 1904. Dentist.		
ROBERT HALL MORRISON,	B. E.,	Stanley, N. C.
President Mariposa Cotton Mills.		
WILLIAM MONTGOMERY PERSON,	B. E.,	Sparrow's Pt., Baltimore, Md.
Maryland Steel Company.		
JUNIUS EDWARD PORTER,	B. E.,	Washington, N. C.
General Contractor.		
ROGER FRANCIS RICHARDSON,	B. E.,	Ensley, Ala.
Construction Engineer Tennessee Coal, Iron and Railroad Co.		
WILLIAM EDWIN ROSE,	B. E.,	Newport News, Va.
Newport News Shipbuilding and Dry Dock Co.		
FLOYD DEROSS,	B. E.,	Charlotte, N. C.
Salesman Fostoria Incandescent Lamp Co.		
IRA OBED SCHAUB,	B. S.,	Raleigh, N. C.
Chemist in Soil Investigation, Department of Agriculture.		
JOHN WADE SHORE,	B. S.,	Boonville, N. C.
Farmer and Teacher.		
WILLIAM TURNER SMITH,	B. E.,	Dublin, Ga.
Contractor Crofts & Smith.		
SOLOMON ALEXANDER VEST,	B. S., 1900; B. Agr., 1901,	Mt. Pleasant, Tenn.
Chief Chemist F. G. Smith Laboratory and Chemist Rockdale Iron Co.		
ROSCOE MARVIN WAGSTAFF,	B. E.,	Newport News, Va.
Draftsman with Newport News Shipbuilding and Dry Dock Co.		
GAITHER HALL WHITING,*	B. S.,	Richmond, Va.

CLASS OF 1901.

FLETCHER HESS BARNHARDT,	B. E.,	Phoenixville, Pa.
Assistant Engineer Phœnix Bridge Co.		
WILLIAM OSBORNE BENNETT,	B. E.,	Wadesboro, N. C.
Manager South Atlantic Oil Co.		
FRED WILHELM BONITZ,	B. E.,	Wilmington, N. C.
Attorney at Law.		
ZOLLY MOSBY BOWDEN,	B. E.,	Tampa, Fla.
BEDFORD JETHRO BROWN,		Charlotte, N. C.
Meter Expert Southern Power Co.		

* Deceased.

Name.	*Degree.*	*Address.*
Paul Collins,	B. S.,	New Haven, Conn.
Chemist Sanderson Fertilizer and Chemical Co.		
William Pescud Craige,	B. S.,	New Orleans, La.
With Peter F. Pescud, Underwriter.		
William Lois Craven,	B. E.,	York, Pa.
Draftsman York Bridge Co.		
Felix Gray Crutchfield,	B. E.,	Winston-Salem, N. C.
Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.		
George Maslin Davis,	B. E.,	Winston-Salem, N. C.
Chief Draftsman Southbound Railway Co.; also General Manager Winston Tag Machine Co.		
William Dollison Faucette,	B. E.,	Portsmouth, Va.
Assistant Civil Engineer Seaboard Air Line Railway.		
Benjamin Oliver Hood,	B. E.,	New York, N. Y.
With F. A. Burdett, Consulting Engineer.		
Martin Kellogg,	B. Agr.,	Gatesville, N. C.
Register of Deeds of Gates County.		
Jesse Julian Liles,	B. E.,	Pittsburg, Pa.
Electrical Engineer General Electric Co.		
Lewis Omer Lougee,	B. E.,	Pittsburg, Pa.
Of the firm of George S. Baton & Co., Civil and Mining Engineers.		
Charles Harden McQueen,	B. E.,	Richmond, Va.
Civil Engineer Atlantic Bitulithic Co.		
William Franklin Pate,	B. S.,	Wooster, Ohio.
Assistant Chemist Agricultural Experiment Station.		
Edward Oscar Smith,	B. E.,	Newport News, Va.
Special Draftsman Newport News Shipbuilding and Dry Dock Co.		
Walter Stephen Sturgill,	B. E.,	Fort D. A. Russell, Wyo.
First Lieutenant Second Field Artillery, U. S. Army.		
Beverly Nathan Sullivan,	B. S.,	Winston-Salem, N. C.
Superintendent Winston-Salem Light and Fuel Co.		
Charles Augustus Watson,*	B. S.,	Raleigh, N. C.
Benjamin Vaden Wright,	B. E.,	Laurel, Miss.
Engineer of Bridges and Buildings M. J. & K. C. R. R. Co.		

CLASS OF 1902.

William David Roseman,	B. E.,	Rocky Mount, N. C.
Farmer.		
Junius Sidney Cates,	B. S.,	Washington, D. C.
M. Agr. 1904. U. S. Department of Agriculture.		
Robert Baxter Cochran,	B. E.,	Urbana, Ohio.
Electrical Engineer. Home address, Statesville, N. C.		

* Deceased.

Name.	*Degree.*	*Address.*
James Lumsden Ferebee,	B. E.,	Wilmington, Del.
Resident Engineer Water Department City of Wilmington.		
Robert Irving Howard,	B. E.,	Greenville, N. C.
Bookkeeper Water and Light Commission.		
John Luther McKinnon,	B. Agr.,	Laurinburg, N. C.
Farmer.		
Laurie Moseley,	B. E.,	Greensboro, N. C.
Southern Agent Owego Bridge Co.		
Vassar Young Moss,	B. E.,	Canonsburg, Pa.
Draftsman Fort Pitt Bridge Works.		
Charles Arthur Nichols,	B. E.,	Muscogee, Indian Ter.
Merchant.		
James Lafayette Parker,	B. E.,	New York, N. Y.
Assistant Engineer H. C. Keith, Consulting Engineer.		
William Benedict Reinhardt,	B. E.,	Dawson, Y. T.
Electrician Dawson Electric Light and Power Co., Ltd.		
Russell Elstner Snowden,	B. E.,	Moncure, N. C.
Assistant Civil Engineer S. A. L. Railway. Home address, Snowden, N. C.		
Joseph Platt Turner,	B. E.,	Spray, N. C.
Vice President and Superintendent Lily Mills.		
Cleveland Douglas Welch,	B. E.,	Gastonia, N. C.
Luray Cotton Mills.		

CLASS OF 1903.

William Norton Bogart,	B. E.,	Washington, N. C.
Leslie Morwood Boney,	B. E.,	Wallace, N. C.
Architect.		
John Samuel P. Carpenter,	B. E.,	Cherryville, N. C.
Superintendent and Director Melville Manufacturing Co.		
Walter Clark, Jr.,	B. E.,	Raleigh, N. C.
Lawyer.		
John Elliot Coit,	B. Agr.,	Tucson, Ariz.
Ph. D. Cornell University. Horticulturist Arizona Experiment Station.		
Summey Crouse Cornwell,	B. E.,	Shelby, N. C.
Civil Engineer.		
Charles Lester Creech,	B. S.,	New York, N. Y.
Manager of New York Office of John W. Fries.		
Eugene English Culbreth,	B. E.,	Raleigh, N. C.
Bookkeeper E. M. Uzzell & Co., Printers.		
Walter Lee Darden,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway, Portsmouth, Va.		

Name.	*Degree.*	*Address.*
JUNIUS FRANKLIN DIGGS,	B. S.,	Rockingham, N. C., R. 1.
Farmer and Merchant.		
THEOPHILUS THOMAS ELLIS,	B. E.,	Henderson, N. C., R. 4.
Farmer.		
JOHN DANIEL FERGUSON,	B. E.,	Bladenboro, N. C.
Civil Engineer and Farmer.		
HUGH PIERCE FOSTER,	B. E.	
Not heard from. Home address, Nance, Granville County, N. C.		
OLIVER MAX GARDNER,	B. S.,	Shelby, N. C.
Lawyer.		
LAMAR CARSON GIDNEY,	B. E.,	Shelby, N. C.
JOHN HOWARD GLENN,*	B. E.,	Crowder's Creek, N. C.
EMIL GUNTER,	B. E.,	Oshkosh, Wis.
Chief Engineer and Electrical Engineer Winnebago Traction Co. Home address, Pierson, Fla.		
EUGENE COLISTUS JOHNSON,	B. E.,	Ingold, N. C.
Sawmilling.		
JAMES MATTHEW KENNEDY,	B. E.,	Raleigh, N. C.
Architect.		
BENNETT LAND, JR.,	B. E.,	Jacksonville, Fla.
Division Engineer Seaboard Air Line Railway.		
JOHN THOMAS LAND,	B. E.,	Norfolk, Va.
Civil Engineer with E. C. Foreman and J. T. Land.		
EDMOND SHAW LYTCH,	B. E.,	Mulberry, Fla.
Electrical Engineer Prairie Pebble Phosphate Co.		
JESSE JOHN MORRIS,	B. E.,	Norfolk, Va.
Civil Engineer Norfolk and Southern Railroad. Not heard from.		
DAVID STARR OWEN,	B. E.,	Fayetteville, N. C.
Superintendent Standard Turpentine Co.		
JOHN HARVEY PARKER,	B. E.,	Savannah, Ga.
Secretary-Treasurer Pepsi-Cola Bottling Co.		
JOEL POWERS,	B. E.,	Goldsboro, N. C.
Draftsman Dewey Bros.		
EDWARD HAYS RICKS,	B. E.,	Enfield, N. C.
Machinist Baldwin Locomotive Works.		
GASTON WILDER ROGERS,	B. E.,	Raleigh, N. C.
C. E. 1905. Civil Engineer Seaboard Air Line Railway.		
CHARLES BURDETTE ROSS,	B. E.,	Charlotte, N. C.
Contractor.		
JOHN HOUSTON SHUFORD,	B. S.,	Knoxville, Tenn.
Technical Representative and Salesman Berlin Aniline Works.		
EDWARD ROE STAMPS,	B. E.,	Macon, Ga.
Superintendent F. S. Royster Guano Co.		

* Deceased.

Name.	*Degree.*	*Address.*
George Yates Stradley,	B. E.,	Roanoke, Va.
Structural Draftsman Virginia Bridge and Iron Company.		
Charles Edward Trotter,	B. S.,	Baltimore, Md.
Medical Student Johns Hopkins University.		
Jonathan Winborne White,	B. S.,	State College, Pa.
Assistant Chemist Agricultural Experiment Station.		
Edwin Seymour Whiting,*	B. E.,	Hamlet, N. C.

CLASS OF 1904.

Nelson Adams,	B. E.,	McColl, S. C.
Farmer.		
Haywood Lewis Alderman,	B. E.,	Panama, R. P.
Assistant Engineer Panama-American Corporation.		
Eugene Cleveland Bagwell,	B. E.,	Hull, Fla.
General Superintendent Charlotte Harbor and Northern Railway.		
Edward Par Bailey,	B. E.,	Wilmington, N. C.
President and Manager Wilmington Iron Works.		
James Claudius Barber,	B. E.,	Barber, N. C.
Farmer.		
William Walter Barber,	B. E.,	Barber, N. C.
Farmer.		
William Alexander Barrett,	B. E.,	Missoula, Mont.
Chief Engineer Missoula Light and Power Co. Home address, White Store, N. C.		
Timothy Eldridge,	B. E.,	Mt. Olive, N. C.
Superintendent Electric Light Plant.		
James William Farrior,	B. E.,	Schenectady, N. Y.
General Electric Company, Testing Department.		
William Walter Finley,	B. S.,	North Wilkesboro, N. C.
Farmer and Breeder of Registered Percheron Horses.		
George Washington Foushee,	B. E.,	Gibsonville, N. C.
Mineola Manufacturing Company.		
Edgar William Gaither,	B. S.,	Wooster, Ohio.
Assistant Chemist Ohio Agricultural Experiment Station.		
Paul Stirewalt Grierson,	B. E.,	Newport News, Va.
Electrician in charge Charles Cory & Son, New York.		
Joseph Perrin Gulley, Jr.,	B. E.,	Philadelphia, Pa.
Meterman Philadelphia Electric Light Co.		
Jarvis Benjamin Harding,	B. E.,	Guadalajara Jalisco, Mex.
Locating Engineer Southern Pacific Railway. Home address, Greenville, N. C.		

* Deceased.

Name.	*Degree.*	*Address.*
George Herbert Hodges,	B. E.,	Scottdale, Pa.
Engineer H. C. Frick Coke Co.		
Jesse McRae Howard,	B. E.,	Concord, N. C.
Assistant Superintendent Gibson Manufacturing Co.		
Branton Faison Huggins,	B. E.,	Macon, Ga.
Central Georgia Land and Lumber Co.		
Hill McIver Hunter,	B. E.,	Greensboro, N. C.
Assistant Purchasing Agent Proximity Manufacturing Co. and White Oak Mills.		
William Kerr,	B. S.,	San Diego, Cal.
In Forestry work. Care of J. A. Creelman.		
Ernest Edwin Lincoln,	B. E.,	Phoenixville, Pa.
Draftsman Phœnixville Bridge Co.		
John Fairly McIntyre,	B. E.,	Laurinburg, N. C.
Farmer.		
James McKimmon,	B. E.,	Raleigh, N. C.
Bookkeeper Raleigh Banking and Trust Co.		
Joseph Alfred Miller, Jr.,	B. E.,	Brevard, N. C.
Vice President and Manager Miller-DeVane Supply Co.		
William Field Morson,	B. E.,	Dante, Va.
Assistant Engineer C., C. & O. Railway.		
Leon Andrew Neal,	B. E.,	Bristol, Tenn.
Assistant Engineer Virginia and Southwestern Railway Co.		
William Joel Patton,	B. E.,	Brevard, N. C.
Lumber Business.		
Frederick Colwell Phelps,	B. E.,	Washington, D. C.
Care Adjutant General. Second Lieutenant U. S. Army.		
William Walter Rankin,	B. E.,	Fredericksburg, Va.
Professor of Mathematics, Fredericksburg College.		
Risden Patterson Reece,	B. E.,	Winston-Salem, N. C.
Assistant Mechanical Engineer Salem Iron Works.		
William Richardson, Jr.,	B. E.,	Scottdale, Pa.
Draftsman H. C. Frick Coke Co.		
James Clarence Temple,	B. S.,	Experiment, Ga.
M. S. 1908. Bacteriologist Georgia Experiment Station.		
Joseph Kendall Waitt,	B. E.,	Mulberry, Fla.
Civil Engineer Prairie Pebble Phosphate Co.		
Marion Emerson Weeks,	B. E.,	Portsmouth, Va.
Draftsman Norfolk Navy Yard.		
Albert Clinton Wharton, Jr.,	B. S.,	Clemmonsville, N. C.
Stock and Grain Farmer.		

CLASS OF 1905.

Name.	*Degree.*	*Address.*
Leon Franklin Abernethy,	B. Agr.,	Hickory, N. C.
With the Abernethy Hardware Co.		
Robert James Avery,	B. Agr.,	Morganton, N. C., R. 5.
Oscar Luther Bagley,	B. S.,	Weldon, N. C.
Manager Coca-Cola Bottling Works.		
Benjamin Alexander Broom,	B. E.,	Milwaukee, Wis.
Allis-Chalmers Co.		
Joel W. Bullock,	B. Agr.,	Whigham, Ga., R. 4.
Bullock Bros., Tobacco Growers.		
Henry Brozier Cartwright,	B. E.,	Jacksonville, Fla.
Assistant Civil Engineer Seaboard Air Line Railway.		
William Miller Chambers,	B. E.,	Maben, W. Va.
Pay-roll Clerk W. M. Ritter Lumber Co.		
Walter Goss Finch,	B. E.,	Brownsville, Pa.
Civil Engineer War Department.		
Sterling Graydon,	B. E.,	Charlotte, N. C.
Superintendent Atherton Mills.		
Jarvis Benjamin Harding,	B. E.,	Guadalajara Jalisco, Mex.
Locating Engineer Southern Pacific Railway.		
Richard Hugh Harper,	B. S.,	Green Park, N. C.
Manager Green Park Hotel.		
Jere Isaac Herritage,	B. E.,	Jacksonville, N. C.
Surveyor Jacksonville Lumber Co.		
Laban Miles Hoffman, Jr.,	B. E.,	Dallas, N. C.
With Monarch Cotton Mills Co.		
Lloyd Rainey Hunt,	B. E.,	High Point, N. C.
Mechanic, Electrical Engineer Shields & Co.		
Arthur Templeton Kenyon,	B. E.,	Buenaventura, Columbia.
Resident Engineer Columbian Pacific Railway.		
Wm. Franklin Kirkpatrick,	B. E., 1904, B. Agr.,	Kingston, R. I
First Assistant Division of Biology, R. I. Experiment Station.		
Starr Neely Knox,	B. E.,	Charlotte, N. C.
Assistant Engineer Southern Railway.		
James Herritage Koonce,	B. E.,	Jacksonville, Fla.
Assistant Civil Engineer Seaboard Air Line Railway.		
Henry Marvin Lilly,	B. E.,	Waco, Tex.
Draftsman and Building Superintendent S. P. Herbert & Co.		
Lipscombe Goodwin Lykes,	B. E.,	Havana, Cuba.
With Lykes Bros.		
George Green Lynch, Jr.,	B. E.,	Jacksonville, Fla.
Supervisor of Water Softening Plants Atlantic Coast Line Railway.		
Malcolm Roland McGirt,	B. Agr.,	Fayetteville, N. C.
Farmer.		

Name.	*Degree.*	*Address.*
ALTER HOGE MCINTIRE,	B. S.,	State College, Pa.
Assistant in Agronomy Pennsylvania State College.		
MES OSCAR MORGAN,	B. Agr.,	Agricultural College, Miss.
Professor of Agronomy Mississippi Agricultural College.		
NDSAY ALEXANDER MURR,	B. E.,	Jacksonville, Fla.
Assistant Engineer Seaboard Air Line Railway.		
ARLAND PERRY MYATT,	B. S.,	Bayonne, N. J.
Chemist General Chemical Co.		
OHN ALSEY PARK,	B. E.,	Raleigh, N. C.
Instructor in Mathematics N. C. College of Agriculture and Mechanic Arts.		
AMES HICKS PIERCE,	B. S.,	Warsaw, N. C.
Wholesale Lumber Business.		
LEASANT H. POINDEXTER, JR.,	B. Agr.,	Canadian, Tex.
Manager Yard Panhandle Lumber Co.		
DWARD GRIFFITH PORTER,	B. E.,	Tampa, Fla.
Bridge Engineer Seaboard Air Line Railway.		
OBERT WALTER SCOTT, JR.,	B. Agr.,	Rocky Mount, N. C.
uperintendent of Edgecombe Test Farm, N. C. Agricultural Department.		
ONATHAN RHODES SMITH,	B. E.,	Phoenixville, Pa.
Structural Draftsman The Phœnix Bridge Co.		
OHN DAVIDSON SPINKS,	B. E.,	Oriental, N. C.
Inspector U. S. Engineering Department.		
RVIN BLAKENEY STACK,	B. E.,	Monroe, N. C.
Electrical Engineer General Electric Co.		
YLVESTER MURRAY VIELE,	B. E.,	New York, N. Y.
Pennsylvania Railroad Co.		
ALTER JENNINGS WALKER,	B. E.,	Schenectady, N. Y.
General Electric Co. Home address, Winston-Salem, N. C.		
TEVEN DOCKERY WALL,*	B. E.,	Rockingham, N. C.
ALTER WELLINGTON WATT, JR.,	B. E.,	Charlotte, N. C.
Draftsman and Machinery Salesman Saco & Pettee Machine Shops.		
RCHIE CARRAWAY WILKINSON,	B. E.,	Waynesville, N. C.
Locating Engineer Shoolbred & Seaver, Civil Engineers. Home address, Charlotte, N. C.		

CLASS OF 1906.

URANT STEWART ABERNETHY,	B. E.,	Lynchburg, Va.
Civil Engineer Southern Railway. Home address, Hickory, N. C.		
EORGE GILDEROY ALLEN,	B. E.,	Cooleemee, N. C.
Erwin Cotton Mills Co.		
EORGE PAGE ASBURY,	B. E.,	Jonesboro, Tenn., R. 5.
Civil Engineer C., C. & O. Railway.		

* Deceased.

Name.	*Degree.*	*Address.*
James Claudius Beavers,	B. Agr.,	Washington, D. C.
Scientific Fertilizer Investigation. Assistant in U. S. Department of Agriculture.		
Needham Eric Bell,	B. S.,	Auburn, Ala.
Assistant Chemist Agricultural Experiment Station.		
Kenneth Leon Black,	B. E.,	Richmond, Va.
Civil Engineer with I. J. Smith Co., Contractors.		
William Andrews Buys,	B. E.,	Belhaven, N. C.
Civil Engineer for Interstate Cooperage Co.		
Mark Hopkins Chesbro,	B. Agr.,	Claremont, Va.
Farmer.		
Connor Calhoun Clardy,	B. E.,	Schenectady, N. Y.
Testing Department General Electric Co.		
John Washington Clark,	B. E.,	Charlotte, N. C.
B. E. (Tex.) 1907. Chadwick Mills.		
James Duncan Clark,	B. S.,	Tampa, Fla.
Carbonic Acid Manufacturer.		
Samuel Herbert Clarke,	B. E.,	Statesville, N. C.
Civil Engineer. Not heard from.		
Wiley Theodore Clay,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
Duncan Archibald Cox,	B. S.,	Allens Creek, Tenn.
Chemist Bonair Coal and Iron Co.		
Alexander Doane Cromartie,	B. Agr.,	Garland, N. C.
Farmer.		
Latta Vanderion Edwards,	B. E.,	Ithaca, N. Y.
Instructor in Railroad Engineering, Cornell University.		
Weldon Thompson Ellis,	B. E.,	West Raleigh, N. C.
M. E. 1908. Instructor N. C. College of Agriculture and Mechanic Arts.		
Albert Edward Escott,	B. E.,	Raleigh, N. C.
Secretary Raleigh Cotton Mills and Neuse River Mills.		
William Carlyle Etheridge,	B. Agr.,	West Raleigh, N. C.
M. S. 1908. Assistant in Field Crops, North Carolina Agricultural Experiment Station.		
James Beckett Ewart,	B. E.,	New York, N. Y.
Engineer in Experimental Laboratory Western Electric Co.		
Shirley Watson Foster,	B. Agr.,	Washington, D. C.
Agent and Expert Bureau of Entomology, U. S. Department of Agricultu		
Arthur Wynns Gregory,	B. S.,	Shanghai, China.
British-American Tobacco Co.		
Horace Lester Hamilton,	B. E.,	Schenectady, N. Y.
Technical Writer General Electric Co.		
John Frederick Hanselman,	B. E.,	Richmond, Va.
With Morrison Machinery and Supply Co.		
Clarence Wilson Hewlett,	B. E.,	Baltimore, Md.
Graduate Student Johns Hopkins University.		

Name.	Degree.	Address.
ES ALLAN HIGGS, JR.,	B. E.,	Knoxville, Tenn.
Draftsman Southern Railway.		
LLIAM GRAHAM KNOX,	B. E.	
Not heard from. Home address, Charlotte, N. C.		
POINDEXTER LOVILL,	B. E.,	Spokane, Wash.
Civil Engineer North Coast Lumber Co.		
OMPSON MAYO LYKES,	B. E.,	Tampa, Fla.
Cattle Business.		
RACE SMITH MCLENDON,	B. Agr.,	Sanford, Fla.
Farm Superintendent. Holder Real Estate Co.		
YMOND MAXWELL,	B. E.,	Leachville, N. C.
Chief Engineer Mattamuskeet Railroad.		
CY MOORE,	B. E.,	Graham, N. C.
Assistant Engineer Gilbert C. White, Constructing Engineer.		
SEPH GRAHAM MORRISON,	B. Agr.,	Stanley, N. C.
Merchant and Cotton Manufacturer.		
SSE CLARENCE MYRICK,	B. E.,	Wilmington, N. C.
Electrician Tidewater Power Co.		
ARLES FRANKLIN NIVEN,	B. Agr.,	Dahlonega, Ga.
Professor of Agriculture in North Georgia Agricultural College.		
LA ALEXANDER NIVEN,	B. Agr.,	Conway, Ark.
Professor of Agriculture Arkansas State Normal.		
WIS MILTON ODEN,	B. Agr.,	Raleigh, N. C.
Dairyman.		
OMAS JEFFERSON OGBURN, JR.,	B. E.,	Richmond, Va.
Everett Waddey Co.		
YDE ESTER PARKER,	B. S.,	Raleigh, N. C.
Cotton Buyer, Parker Bros. & Co.		
MUEL OSCAR PERKINS,	B. S.,	Raleigh, N. C.
Assistant Chemist N. C. Department of Agriculture.		
NGELO BETTLENA PIVER,	B. E.,	Phoenixville, Pa.
Draftsman Phœnix Bridge Co.		
ILLIAM CRAWFORD PIVER,	B. S.,	New York, N. Y.
With F. C. R. Hemingway.		
URANT WAITE ROBERTSON,	B. E.,	Washington, D. C.
Traveling Salesman American Tobacco Co.		
REDDIE JACKSON TALTON,	B. Agr.,	Pikeville, N. C., R. 2.
Farmer.		
ICHARD HENRY TILLMAN,	B. E.,	Rochester, N. Y.
Rochester Railway and Light Co.		
/ILLIAM SIDNEY TOMLINSON,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway.		
EID TULL,	B. E.,	Elise, N. C.
Civil Engineer Durham and Charlotte Railway.		

Name.	*Degree.*	*Address.*
JACKSON CORPENING TUTTLE,	B. E.,	Schenectady, N. Y.
Designing Engineer General Electric Co.		
ROBERT PEELE UZZELL,	B. Agr.,	Goldsboro, N. C.
Farming.		
PETER VALAER, JR.,	B. S.,	Washington, D. C.
Assistant Chemist Bureau Internal Revenue.		
LILLIAN LEE VAUGHAN,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
JOHN HARLEY WILLIAMS,	B. E.,	Spartanburg, S. C.
Physical Director City Y. M. C. A.		
LEWIS TAYLOR WINSTON,	B. Agr.,	Bristol, Tenn.
Assistant Cashier Bristol Gas and Electric Co.		

CLASS OF 1907.

HERBERT SCANDLIN BATTIE,	B. E.,	Ithaca, N. Y.
Student Cornell University.		
JOE PITTMAN BIVENS,	B. E.,	New York, N. Y.
Meter Tester New York Edison Co.		
CARNEY JOHN BRYAN,	B. E.,	Panama City, Fla.
Wholesale Dealer in Fish and Oysters.		
LINDSAY FERGUSON CARLLTON,	B. E.,	Charlotte, N. C.
Light and Power Solicitor Southern Power Co.		
ROBERT HILL CARTER,	B. E.,	Wilkinsburg, Pa.
Apprentice Westinghouse Electric and Manufacturing Co.		
JACOB TATUM EATON,	B. Agr.,	Farmington, N. C.
Farmer and Dairyman.		
SEBA ELDRIDGE,	B. E.,	New York City, N. Y.
Student Columbia University.		
BENJAMIN BRYAN EVERETT,	B. Agr.,	Palmyra, N. C.
Farmer.		
JOHN LINDSAY FERGUSON,	B. E.,	Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.		
ELIAS VAN BUREN FOWLER,	B. E.,	Schenectady, N. Y.
General Electric Co.		
CLEMENT LEINSTER GARNER,	B. E.,	Key West, Fla.
U. S. Coast and Geodetic Survey.		
LOVIC RODGERS GILBERT,	B. E.,	Rock Hill, S. C.
Hamilton-Carhartt Cotton Mills.		
ROY JOSEPH GILL,	B. E.,	Manila, P. I.
Civil Engineer Bureau of Lands.		
ROBERT STRICKLER GRAVES,	B. E.,	Schenectady, N. Y
Traveling Salesman General Electric Co.		

Name.	*Degree.*	*Address.*
George Rom. Hardesty,	B. E.,	Goldsboro, N. C.
Assistant Engineer State Hospital.		
Philip William Hardie,	B. E.,	Manila, P. I.
Civil Engineer U. S. Government.		
Jokton Lafayette Hemphill,	B. E.,	Schenectady, N. Y.
With General Electric Co.		
Lawrence James Herring,	B. Agr.,	Raleigh, N. C.
Veterinarian.		
Guy Francis Hinshaw,	B. E.,	Winston-Salem, N. C.
Assistant City Engineer.		
William Norman Holt,	B. E.,	Smithfield, N. C.
Manager Brokerage Co., Holt & Adams.		
Albert Carl Jones,	B. Agr.,	High Point, N. C.
Veterinarian.		
William Whitmore Jones,	B. E.,	Franklin, N. C.
Laundry.		
Lafayette Franck Koonce,	B. Agr.,	Kansas City, Mo., R. 1.
Veterinary Surgeon.		
Louis Edgar Lougee,	B. S.,	Pittsburg, Pa.
Jones & Laughlin Steel Co.		
Henry Kreiger McConnell,	B. S.,	West Nashville, Tenn.
Chemist Federal Chemical Co.		
Oscar Franklin McNairy,	B. E.,	Spartanburg, S. C.
Constructing Engineer A. D. McClain, Contracting Engineer.		
Eugene Franklin Meador,	B. E.,	Reidsville, N. C.
Farmer.		
Bennett Taylor Mial,		Glenlyn, Va.
Foreman McClintic-Marshall Construction Co.		
Home address, Raleigh, N. C.		
Frank Curtis Michael,	B. E.,	Pitstburg, Pa.
Testing Department New York Edison Co.		
John Maple Mills,	B. E.,	Raleigh, N. C.
Raleigh and Southport Railroad.		
Henry Starbuck Montague,	B. S.,	Richmond, Va.
Chemist Virginia-Carolina Chemical Co.		
John Lightfoot Morson,	B. E.,	Raleigh, N. C.
Civil Engineer Seaboard Air Line Railway.		
James Elwood Overton,	B. Agr.,	Ahoskie, N. C.
Dealer in Peanuts.		
Thomas Franklin Parker,	B. Agr.,	Powder Springs, Ga.
M. S. 1908. Teacher Seventh District Agricultural School.		
Fred Maynard Parks,	B. E.,	Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.		
Arthur Lee Paschal,	B. Agr.,	Honolulu, H. I.
Government Agricultural School.		

Name.	*Degree.*	*Address.*
GUY PINNER,	B. E.,	Phoenixville, Pa.
Structural Draftsman The Phœnix Bridge Co.		
WINSLOW GERALD PITMAN,	B. E.,	Cumberland, Md.
McClintic-Marshall Construction Co., Pittsburg, Pa. Home address, Lumberton, N. C.		
JAMES KEMP PLUMMER,	B. S.,	West Raleigh, N. C.
Assistant Chemist N. C. Agricultural Experiment Station.		
LEON JACOB SCHWAB,	B. E.,	Savannah, Ga.
Civil Engineer Central of Georgia Railway.		
JOHN OSCAR SHUFORD,	B. E.,	Lincolnton, N. C.
City Engineer.		
VANCE SYKES,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
LUTHER RUSSELL TILLETT,	B. E.,	Manila, P. I.
Civil Engineering, Bureau of Lands.		
WILLIAM BROOKS TRUITT,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
JOHN ED. TURLINGTON,	B. Agr.,	Ithaca, N. Y.
Student Cornell University.		
EDMUND FARRISS WARD,	B. Agr.,	Lumberton, N. C.
Lawyer.		
LINDSAY MARADE WEAVER,	B. E.,	Lexington, N. C.
Bookkeeper.		
JOHN JACKSON WELLS,	B. E.,	Rocky Mount, N. C.
Civil Engineer.		
DAVID LYNDON WHITE,	B. Agr.,	Greensboro, N. C., R. 2.
Dairyman Greensboro Creamery.		
CECIL BERNARD WHITEHURST,	B. E.,	Morton Park, Ill.
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ARTHUR JOHN WILSON,	B. S.,	Ithaca, N. Y.
M. S. 1908. Graduate Student and Teacher of Chemistry, Cornell University.		

CLASS OF 1908.

Name.	*Degree.*	*Address.*
JOHN CAMILLUS APP,	B. S.,	Charleston, W. Va.
Chief Chemist and Bacteriologist Kanawha Water and Light Co.		
JOHN OSCAR BALDWIN,	B. S.,	Richmond, Va.
Virginia-Carolina Chemical Co.		
GEORGE FRANCIS BASON,	B. E.,	East Orange, N. J.
Crocker-Wheeler Electric Co.		
JOHN LELAND BECTON,	B. E.,	Wilmington, N. C.
Deputy City Engineer.		

Name.	*Degree.*	*Address.*
HARWOOD BEEBE,	B. E.,	Spies, N. C.
WILLIAM LAMAR BLACK,	B. E.,	Rock Hill, S. C.
Southern Power Co.		
ASA GRAY BOYNTON,	B. E.,	Biltmore, N. C.
Landscape Engineer Vanderbilt Estate.		
FRANK HAMILTON BROWN,	B. Agr.,	Cullowhee, N. C.
Teacher Cullowhee Normal and Industrial School.		
JOHN HARVEY BRYAN,	B. E.,	Goldsboro, N. C.
Engineer Electric Light and Water Plant.		
WILLIAM BRYANT BURGESS,	B. E.,	Rocky Mount, N. C.
Electrician Roanoke Rapids Power Co.		
LEWELLYN HILL COUCH,	B. E.,	Greensboro, N. C.
Traveling Salesman Central Electric Co.		
CLAUD COUNCIL DAWSON,	B. E.,	Charlotte, N. C.
Mayes Manufacturing Co.		
ALVIN DEANS DUPREE,	B. E.,	Greenville, N. C.
RAYMOND ROWE EAGLE,	B. Agr.,	Raleigh, N. C.
Civil Engineer Seaboard Air Line Railway.		
MINNIC LUTHER EARGLE,	B. Agr.,	Delmar, S. C.
Farmer.		
ISAAC HERBERT FARMER,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway.		
BENJAMIN TROY FERGUSON,	B. Agr.,	Kimbolton, N. C.
Farmer and Teacher.		
PERCY LEIGH GAINEY,	B. Agr.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
JUNIUS TALMAGE GARDNER,	B. E.,	Shelby, N. C.
Shelby Insurance and Realty Co.		
SETH MANN GIBBS,		West Raleigh, N. C.
Civil Engineer Greater Raleigh Land Co.		
MAURICE MORDECAI GLASSER,	B. E.,	Charleston, S. C.
MOSES HENRY GOLD,		Monroe, N. C.
Civil Engineer Seaboard Air Line Railway.		
JOHN DAVID GRADY,	B. Agr.,	Amsterdam, Ga.
Superintendent of Dairy Farm A. Cohn & Co.		
DORSEY YATES HAGAN,	B. E.,	Greensboro, N. C.
Bandy & Myers, Consulting Engineers.		
MAURICE HENDRICK,	B. E.,	Shelby, N. C.
Ella Cotton Mills.		
HERBERT WILLIAM KUEFFNER,	B. E.,	Burlington, N. C.
With Gilbert C. White.		
CLAUDE MILTON LAMBE,	B. E.,	Durham, N. C.
Mercantile Business.		

Name.	*Degree.*	*Address.*
Charles Edward Latta,	B. E.,	Raleigh, N. C.
Grocer.		
David Lindsay,	B. E.,	Draper, N. C.
Working through mill, German-American Co.		
John Henry Little,	B. E.,	Waycross, Ga.
Engineer in Power Plant, A. C. L. Railway.		
George Lafayette Lyerly,	B. E.,	Hickory, N. C.
Shuford Hardware Co.		
Clarence Talmage Marsh,	B. E.,	Fort McKinley, Me.
Second Lieutenant U. S. Army.		
David John Middleton,	B. Agr.,	Wilmington, N. C., R. 1.
Superintendent of Farm D. L. Gore.		
Benjamin Franklin Pittman,	B. E.,	Richmond, Va.
Virginia Passenger and Power Co.		
Lawrence Lyon Pittman,	B. E.,	Whitakers, N. C.
Ruble Isaac Poole,	B. E.,	Ithaca, N. Y.
Student Cornell University.		
Harry Alexander Powell,	B. E.,	Wake Forest, N. C.
Royall Cotton Mill.		
James Alexander Powell,	B. E.,	Raleigh, N. C.
Draftsman H. P. S. Keller, Architect.		
Thomas Milton Poyner,	B. E.,	Moncure, N. C.
Civil Engineer Seaboard Air Line Railway.		
Edgar English Smith,	B. E.,	San Juan, Porto Rico.
Deck Officer U. S. Coast and Geodetic Survey.		
James Lawrence Smith, Jr.,	B. E.,	Dublin, Ga.
With Crafts & Smith, Bridge Contractors and Civil Engineers.		
Jesse Page Spoon,	B. Agr.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
John Snipes Stroud,	B. E.,	East Durham, N. C.
Erwin Cotton Mill.		
John Lawrence Von Glahn,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
Royall Edward White,	B. E.,	Aulander, N. C.
John C. Williams,	B. E.,	Hazlehurst, Ga.
Bridge Construction Georgia and Florida Railroad.		
Woodfin Bradsher Yarbrough,	B. E.,	Locust Hill, N. C.
John Franklin Ziglar,	B. E.,	Winston-Salem, N. C.
Transitman J. N. Ambler.		

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